

1907

Vol. XVII

No. 1

THE MOTOR WAY

FEBRUARY

The Chicago Automobile Show

"Liberalizing" the Free Alcohol
Law

Automobile Engineering and the
Allied Arts

Ignition Systems at the Garden
Show

Relation of Compression to Speed
and Economy

The Future of the Carriage
Automobile

The Useful Life of a Motor Car

CHICAGO

PAULding
L.S.

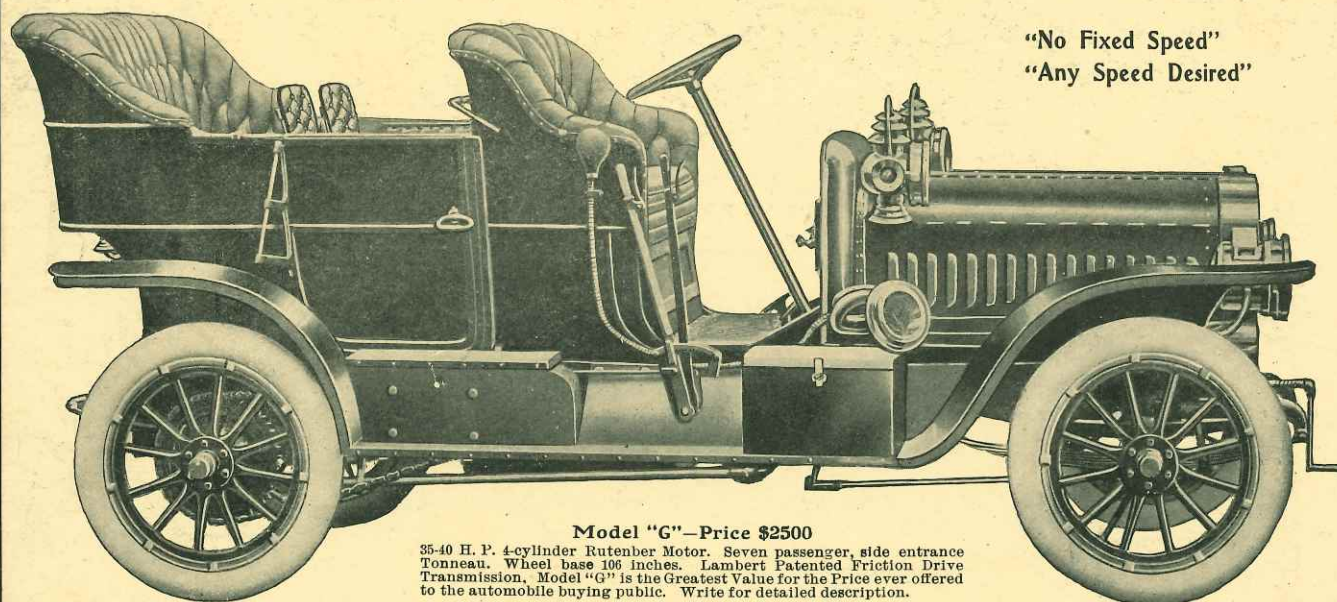
"It's a Stronger Proposition Than You Have Imagined"

DEALERS
EXAMINE

THE LAMBERT

USERS
INVESTIGATE

The Friction Drive Car



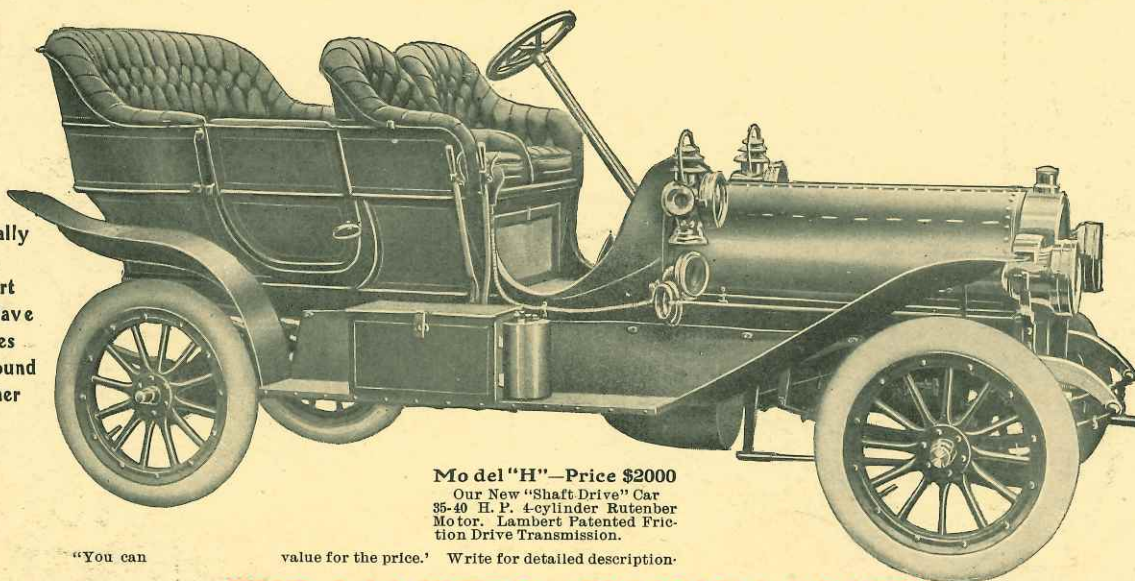
"No Fixed Speed"
"Any Speed Desired"

Model "G"—Price \$2500

35-40 H. P. 4-cylinder Rutenber Motor. Seven passenger, side entrance Tonneau. Wheel base 106 inches. Lambert Patented Friction Drive Transmission. Model "G" is the Greatest Value for the Price ever offered to the automobile buying public. Write for detailed description.



These Cars are Mechanically Right. Lambert Cars Have Features Not Found on Other Cars.



Lambert Cars Have Been a Proven Success for Years



Model "H"—Price \$2000

Our New "Shaft Drive" Car
35-40 H. P. 4-cylinder Rutenber Motor. Lambert Patented Friction Drive Transmission.

"You can

value for the price." Write for detailed description.

Good Dealer Agents
Wanted
in a Few Localities

THE LAMBERT "FRICTION DRIVE"

has proven to those skeptical minds that this method of transmission is not only possible, but a great proven success.

SEE OUR EXHIBIT

Chicago Automobile Show, in the Armory, February 2nd to 9th.

Write for Special
Art Catalogue

The Buckeye Manufacturing Co., Anderson, Ind., U.S.A.

Members American Motor Car Manufacturers Association, New York

Rambler

A Leader of Leaders

Model 25, the leader of the Rambler line for 1907, stands without a superior in comfort, convenience and positive dependability.

The mechanical equipment contains every feature that affords satisfaction to owner and operator, either for city service or long, continuous tours under most severe conditions.

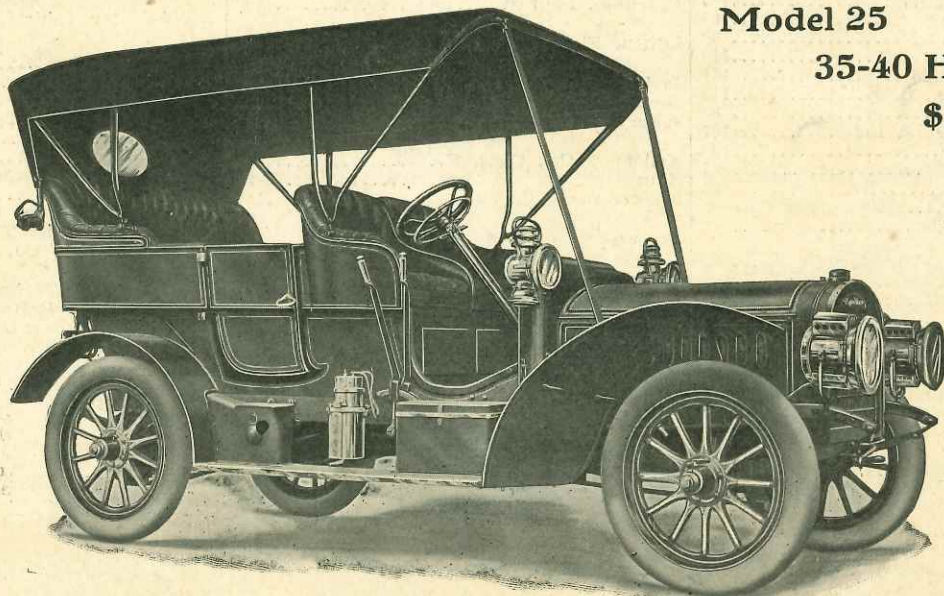
See it and be convinced, or, if inconvenient to visit our nearest representative, write for our new catalog describing this and three other models, each the leader in its respective class.

Main Office and Factory, Kenosha, Wisconsin

BRANCHES:

Boston, Chicago, Milwaukee, Philadelphia, San Francisco

Thomas B. Jeffery & Company



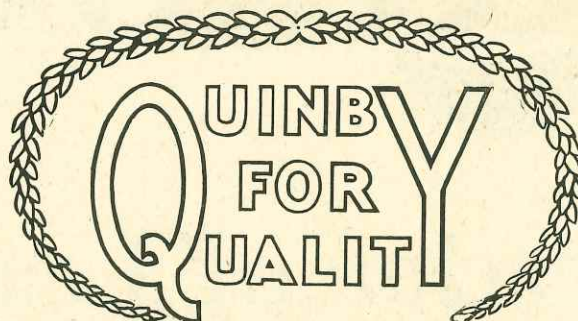
Model 25

35-40 H. P.

\$2,500

SEE THE Quinby Aluminum Bodies

In the
Matheson
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Booth C.5
Coliseum
Chicago

J. N. QUINBY & COMPANY

CARRIAGE BUILDERS

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NEWARK, N. J.

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Lacoste Ignition

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MAGNETOS
SPARK PLUGS
LIMOUSINE OUTFITS
M. & B. BALL BEARINGS
O. S. ODO SPEEDOMETER
BLERIOT LAMPS
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The achievements of Michelin Tires are unparalleled.

They place the Michelin in a sphere all its own.

Michelin Tires cost only about 10 to 12 per cent more than domestic tires. They are the cheapest by every test:

In the 1907 International Races both in France and America Michelin tires will be used by

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1000 Miles or More Per Charge

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"FRANCO" OIL CANS
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ETC., ETC., ETC.

FRANCO-AMERICAN AUTO & SUPPLY CO.

1404-1406 Michigan Avenue, Chicago

MANUFACTURERS' AGENTS—JOBBER AND RETAIL DEALERS IN

ALL AUTOMOBILE SUPPLIES AND MOTOR SUNDRIES

The Franco-American Auto & Supply Company always welcome a comparison of prices. This not only applies to their entire French line of automobile sundries, but also to their full line of American goods, such as coils, magnetos, plugs, wire, lamps, horns, etc., on all of which their prices are as reasonable as is consistent with the high standard of quality maintained by the house.

Wayne

"The Car That Takes You Through"

LEADER

Of all American designed cars in 100-mile race at Ormond

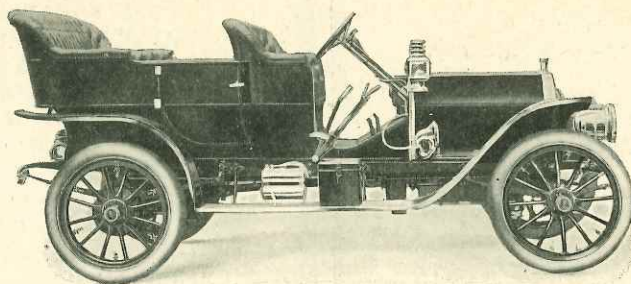
WINNER

Of 5-mile standing start race at Ormond Beach

HOLDER

Of record over Los Angeles-Riverside course, as well as many others.

The machines entered at Ormond and Los Angeles were regular stock cars, privately owned, and not designed for racing purposes. Wayne cars are daily outdistancing competitors all over the country. Catalogue telling why they are always in the lead sent upon request.



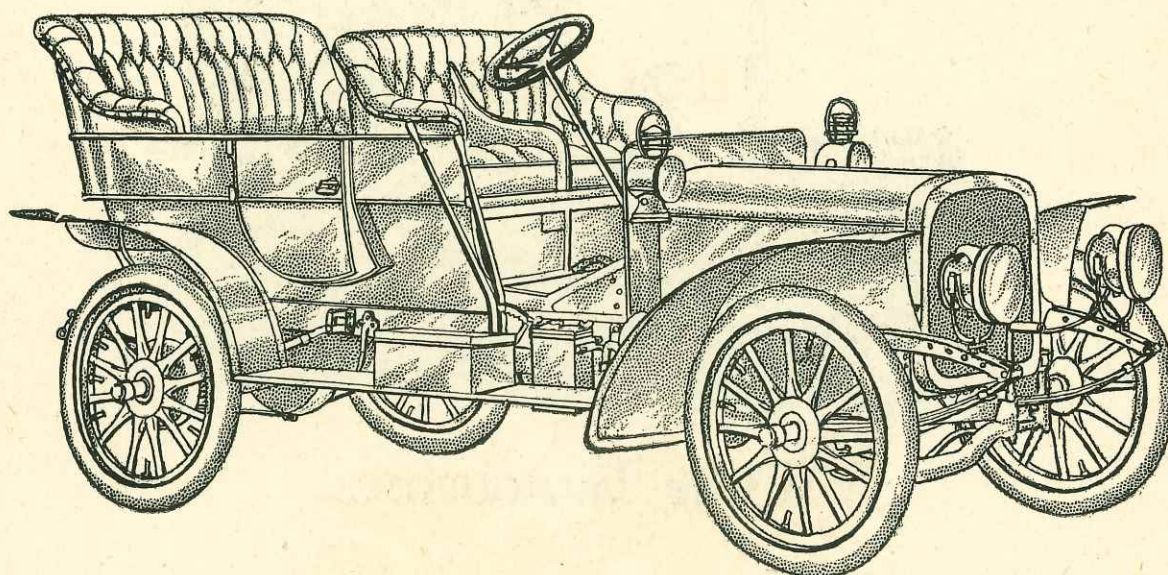
Four Models on which we guarantee deliveries:

Model N, 30-35 horsepower, five passenger Touring Car . . .	\$2,500
Model R, 50 horsepower, seven passenger Pullman Tourist . .	3,500
Model K, 35 horsepower, five passenger Touring Car	2,500
Model N, 30-35 horsepower Gentleman's Roadster	2,500

Wayne Automobile Company

Dept. 3 — DETROIT, MICH.

A Dozen
Pointed Truths
 Regarding the
\$2,000 MODEL "D"
Aerocar



Truth 1—It is a long rakish appearing car which is neither too large nor too small.

Truth 2—The very best of materials are used in every part. You do not become a tester when you buy an Aerocar.

Truth 3—Accuracy in every detail of construction, makes it a perfectly balanced, quiet, smooth-running car.

Truth 4—The four cylinder, air-cooled, 20 horse power motor never fails to furnish an abundance of power summer or winter.

Truth 5—Every pound of motor power is transmitted to the rear wheels. The multiple disc clutch and the horizontal shaft absorb but little.

Truth 6—The finish and upholstery of the Aerocar is exceedingly fine and durable. You can justly be proud of your possession.

Truth 7—It will carry four persons with delightful comfort and an abundance of room for all.

Truth 8—It is a rich man's car at a poor man's price. The greatest value in the 1907 market.

Truth 9—It is easy to understand. There are few parts. Every movement in the operation is the most natural.

Truth 10—It is extremely economical—winning many honors last season—and you can care for the car yourself.

Truth 11—It will meet your daily requirements the year round. For touring, business or pleasure, you can always depend upon this machine.

Truth 12—You, Mr. Naught Seven Motorist, will thank yourself and us too, if you buy one of these handsome Touring Cars.

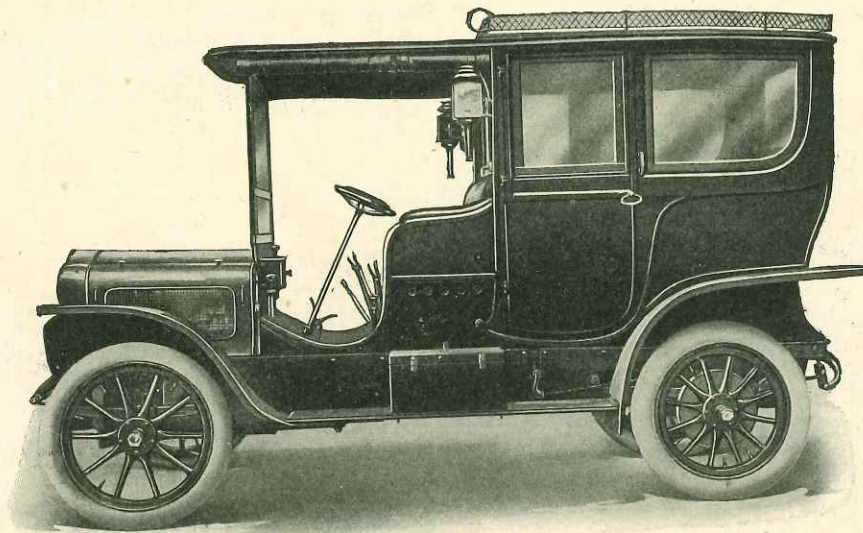
Model "F" 40 H. P. Water Cooled Touring Car \$2,750

Model "C" 20 H. P. Air Cooled Touring Runabout \$2,000

The Aerocar Company
 Detroit, Mich., U. S. A.

MEMBER A. M. C. M. A.

THE INCOMPARABLE
WHITE
THE CAR FOR SERVICE



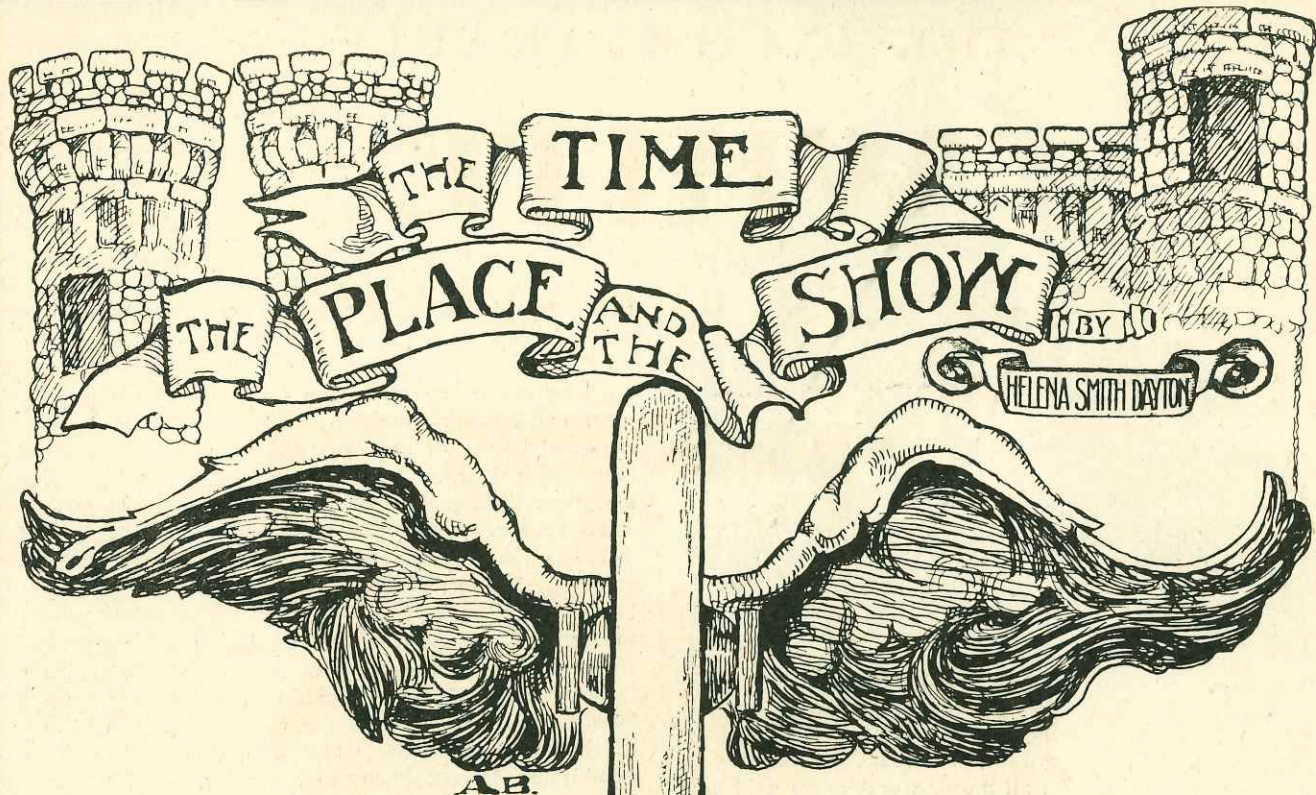
White Limousines

In addition to touring car and runabout bodies, the wonderful new Model "G" and Model "H" White Steam Cars are provided with limousine bodies of the most luxurious type. The White limousines are by far the most desirable cars of their class because the quality of absolute noiselessness of operation is particularly desirable in a limousine, for the reason that in any car with a closed body, the noise made by the mechanism is much more noticeable and annoying than in an open vehicle.

Another desirable feature of the White limousine is that its speed responds instantly to the throttle, making it by far the easiest to guide safely and speedily through the crowded city streets.

Literature descriptive of the new models will be mailed on request

THE WHITE COMPANY
CLEVELAND, OHIO



THE Coliseum, the Coliseum Annex and the First Regiment Armory might be compared to the three rings of a gigantic circus where the biggest show on record is taking place. To fittingly describe the triumph attained by the Chicago Automobile Show would require all the fancy adjectives that made Toby Hamilton famous. The stupendous and fascinating "side shows" in the balcony where two hundred makers of accessories have attractive booths, the aerial act, furnished by the airship soaring aloft, the marvelously artistic and original stage setting all combine to make the seventh annual show of the National Association of Automobile Manufacturers the climax of all motor expositions. And to carry the simile of the sawdust arena still further, General Manager Samuel A. Miles made a dandy ringmaster! If appreciation is a compensation for months of hard work and constant planning, then Mr. Miles must indeed be gratified at the unbounded delight of the thousands who have haunted this Motorland of his creation since its opening in a blaze of glory on Saturday, February 2 at 2 o'clock.

It must be the millennium in the motor world, for, as the lion and the lamb shall lie down together and a little child shall lead them, so did all the

American-made automobiles gather together under the same roof. In this union there was strength, for it served to make the display more interesting to the prospective buyers of cars and all others interested in motors.

The decorations claim attention before the visitor at the show even glances at the machines. Red, white and gold is the color scheme in the Coliseum, while green and white are the predominating tones in the Armory. Banners of bunting conceal the ceilings and gracefully draped scarfs adorn the balconies. But this merely forms the foil for the real decorative feature of the show—the cream colored partitions on which are wonderful bas relief figures and motor scenes with panels at intervals of the presiding god of the machine—Mercury. Indeed, the fleet-footed, winged messenger has become the symbol of the motor and at regular intervals throughout the three buildings bronze statuettes of the familiar figure are perched on pedestals. Wonderful allegorical figures stand out from the partitions on high, while groups and motoring scenes everywhere challenge intelligent study and more than the passing glance one usually gives "decorations." To relieve the classic figures is a series of touring scenes representing motoring in every clime. One



Manager Samuel A. Miles.



The Girl Who Likes to Try Them All.

may fancy one's self spinning down Greenland's Icy Mountain or breaking the speed laws of the Sahara desert.

A shrine before which all motor worshippers paid homage was on the main floor on the east side, where, under growing vines and surrounded by green hedges with a background panel ornamented with the bas relief automobile designs, stood a large Mercury poised for flight as if he expected soon to take advantage of one half of 46.

And, rising above the glittering display, is an airship, accepted as a prophesy by everyone who glanced upward. "I suppose we'll have them soon," was the matter-of-fact comment, "but automobiles are good enough for me!"

The automobile show is the only type of exhibit where the people really go to see the exhibits and where the latter is not outshone by any other interest or feature. "The show's the thing," said Shakespeare, and it might have been the motor show of which he spoke. An automobile seems to beat a touch of nature for making the "whole world kin" judging by the heterogeneous streams of people that flowed up and down the miles of green and red carpeted aisles. The small boy, content to acquire catalogs and souvenirs, and the millionaire, who came to buy several cars, rubbed elbows and looked with the same keen, eager interest at the mysterious workings of the "pop screws and gig wheels," as one girl airily summed up the intricate mechanisms.

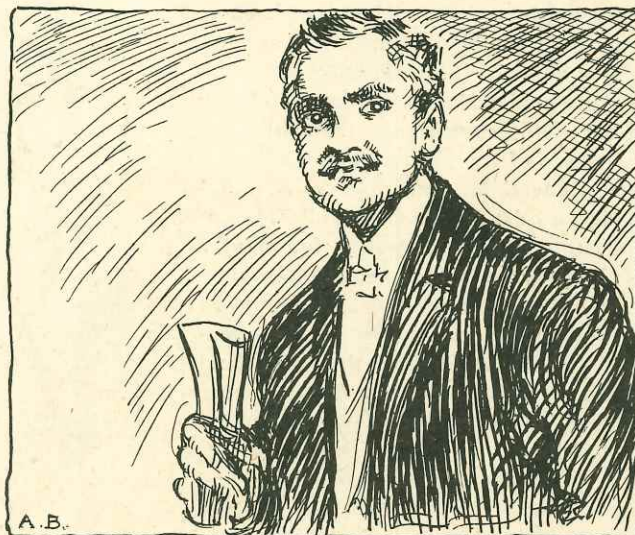
Surely every motor taste could be suited, for variety runs riot from the tailor-made looking cars built for service and speed, to the luxurious creations whose design and color might have been turned out by a modiste in the Rue de la Paix. When My Lady selects her car she tries it on, as it were, to see if it is becoming. Fastidious is the modern purchaser of a motor, for the day has passed when one was content with any machine that could be guaranteed to run. All cars are good now—some are merely better than others. The day of the experiment

has passed and the competition rages more along the lines of quality and beauty. Time was when demonstrations were given to convince the prospect that the car would actually "go." Now demonstrations are given to prove how smooth, how hair-splittingly perfect the new models are!

Every exhibit has its giddy car—its real show figure—and it is surprising how the most conservative taste approves of these gay and festive vehicles. There's something about an automobile that arouses one's desire to outdo and make a mild sensation, so one gets real fussy about the color scheme. So resourceful are the manufacturers of cars that they bring out new shades that baffle the color experts. Many tints unseen before have made their debut in the new cars. Some dealers have sent to Paris at vast expense and had materials made and dyed to match some unusual tone. A wonderful harmony in coloring is the result. Even women accustomed to the most extravagant appointments marvel at the completeness and luxury of the limousines, landaulettes or broughams, with their vanity cases, mirrors, card cases, watches and other little conveniences dear to the feminine heart.

To be sure, it is what's inside the splendid case that interests the masculine mind. He wants to see the latest styles and improvements in "transmission," "ignition," "magnetos," "carbureters," "drive," and all the rest of the motor language enthusiasts talk when they get together. Men stand entranced before the skeleton cars where the "works" invite the closest scrutiny. One salesman tells how a "prospect" wanted the chassis of his car highly finished like one of these motors-in-negligee that was on exhibition. It cost \$2,300 to bring that skeleton of steel up to its fancy polish, so needless to say the prospect meekly took his "without." The high average of intelligence about things motorical was astonishing in the vast multitudes. Nothing seems too technical to be comprehended by every man, small boy and some women. The salesmen have to be on the alert to answer the fancy questions put to them on every hand. It's an unhappy salesman who doesn't know his own car, for the public wants to know all about motors down to the most insignificant detail.

"I want an electric to run myself," said one smart little woman, as she made a critical inspection of a handsome



Louis Lorimer Fest—Assistant Manager.

victoria, "though I've never been able to run even a sewing machine. But I like an electric because when you are seen in it people know it really belongs to you. It more distinctly belongs to a woman than does any other type of vehicle. When I go out in my big gasoline car with the driver, it looks as if the car belonged to my husband or brother or some other relative and they were just allowing me to ride in it. So I am going to buy an electric and run it myself and it will be my car!"

On the other hand, the woman who runs an electric sighs for a gasoline world to conquer and she gets just as busy peering into the secrets of the engine as her brother.

There are those present with automobile tastes and democratic pocketbooks, but they are as enthusiastic investigators as those technically known as "live bait" among the dealers. When one's head reeled with the magnificence of decoration and the endless array of cars, it was a relief to study the people. Country boys in coonskin caps and weighed down with heavy ulsters, grimy workmen with mechanical tendencies and unrealized ideals, wild-eyed inventors, hundreds of that great class of human beings Gelett Burgess calls "bromides"—the average every day sort who "go with the crowd," thousands of "wishers" who comprise those who have no cars, thousands who have friends-who-have-cars and who therefore have a personal and intimate acquaintance with motor topics, hundreds who go because it's "the thing," a generous sprinkling of society, scores who are connected with "the trade" from all parts of the globe, the pretty girls whom the dealers like to lure into the cars to set them off, the bored woman who trails after her husband and who looks blank when he makes elaborate and scientific explanations, the souvenir fiends, the children to whom it is a lark and, last but not least, the prosperous individual who had a car last year and who wants to look around before signing up with his company—all these and thousands more, make up the motor show patrons.

Everybody is tickled over the tunnel that connects the Coliseum and the Armory. You don't realize what a good natured, jolly crowd it is until you go through the chute and hear it ring with laughter and enthusiasm and the delightful comments about the show and the cheerful acceptance of the long walk between buildings. The pro-



I Want to Buy a Car—But My Wife Won't Let Me.

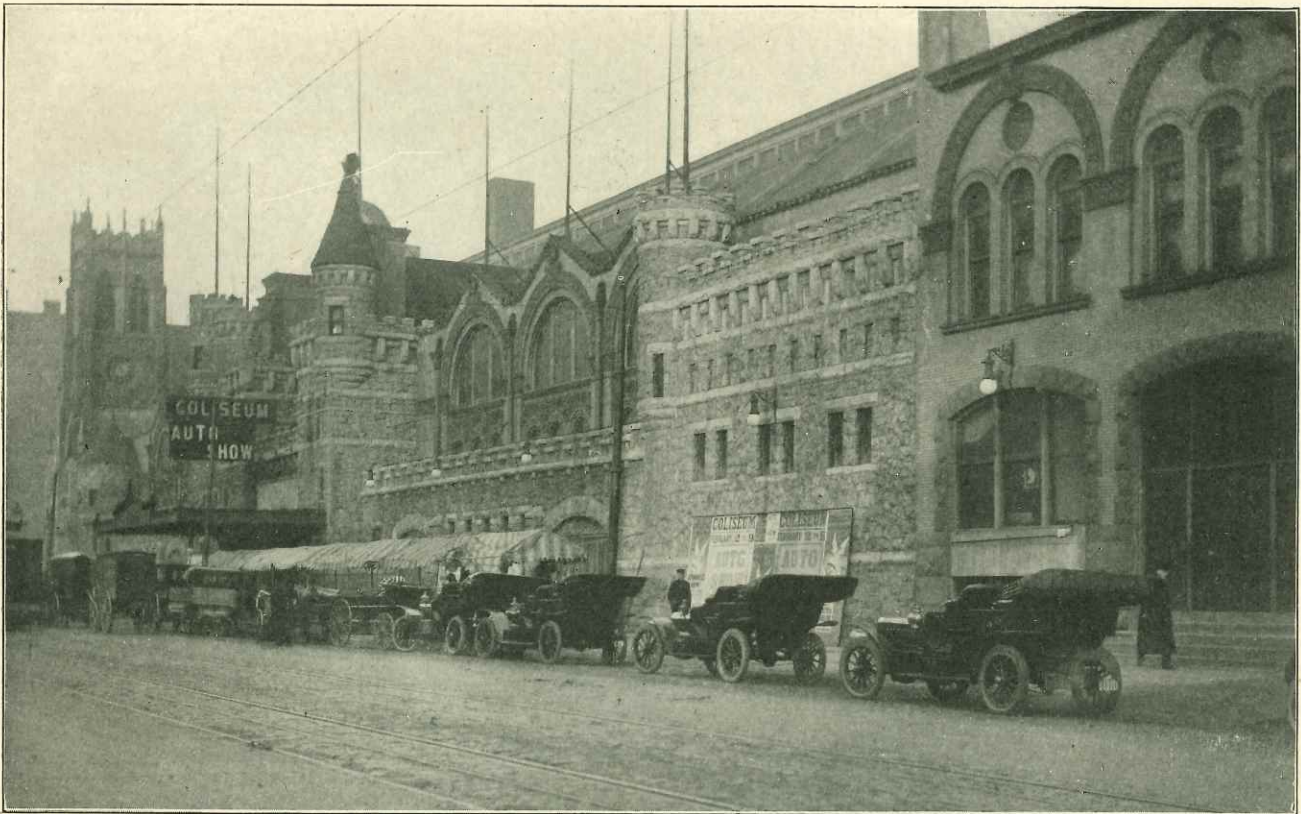
cession moves single file, one going and one coming. The tunnel furnished material for the wits who compared it to the chute at the stock yards where the four-footed victims pass through prior to getting knocked in the head.

Within the Armory there is the same buzz and general dash and go which characterizes the display in the Coliseum, only by this time one begins to take the sight-seeing more leisurely. The green and white coloring is restful to the eyes and the music is a little more subdued. To walk all around the show, including the balconies, gives the devotee of the motor more exercise than he gets in many a day. One is led on and on by hundreds of attractions up and down aisles, around galleries until one gratefully climbs into a comfortable luxurious car and remains as long as good manners permit.

Not the least interesting feature of the show is the neat little booths that line the balconies, fitted up in Mission style and affording a splendid vantage point to view the busy scene below. There's everything with which to dress up an automobile. The different fashions exhibited by the various makers of the same accessory are very interesting, while it would seem almost incredible to the uninitiated that so many appliances could be used on a motor. These exhibitors of supplies make life merry for the souvenir collectors. They give away booklets, buttons and all sorts of advertising novelties until the enthusiastic collector is laden down with spoils. Many who cannot this year afford new cars were at least planning to add a few of the season's novelties in "fixings." Those who have jumped high into the air at the near "toot" of a warning horn and who had perhaps never been on any more intimate terms with motors than those passing in the street, delighted in giving a horn a squeeze as they passed the booth where all kinds of "noise" instruments were shown. Indeed, the various "noises" were part of the show that made it distinctly a motor show.



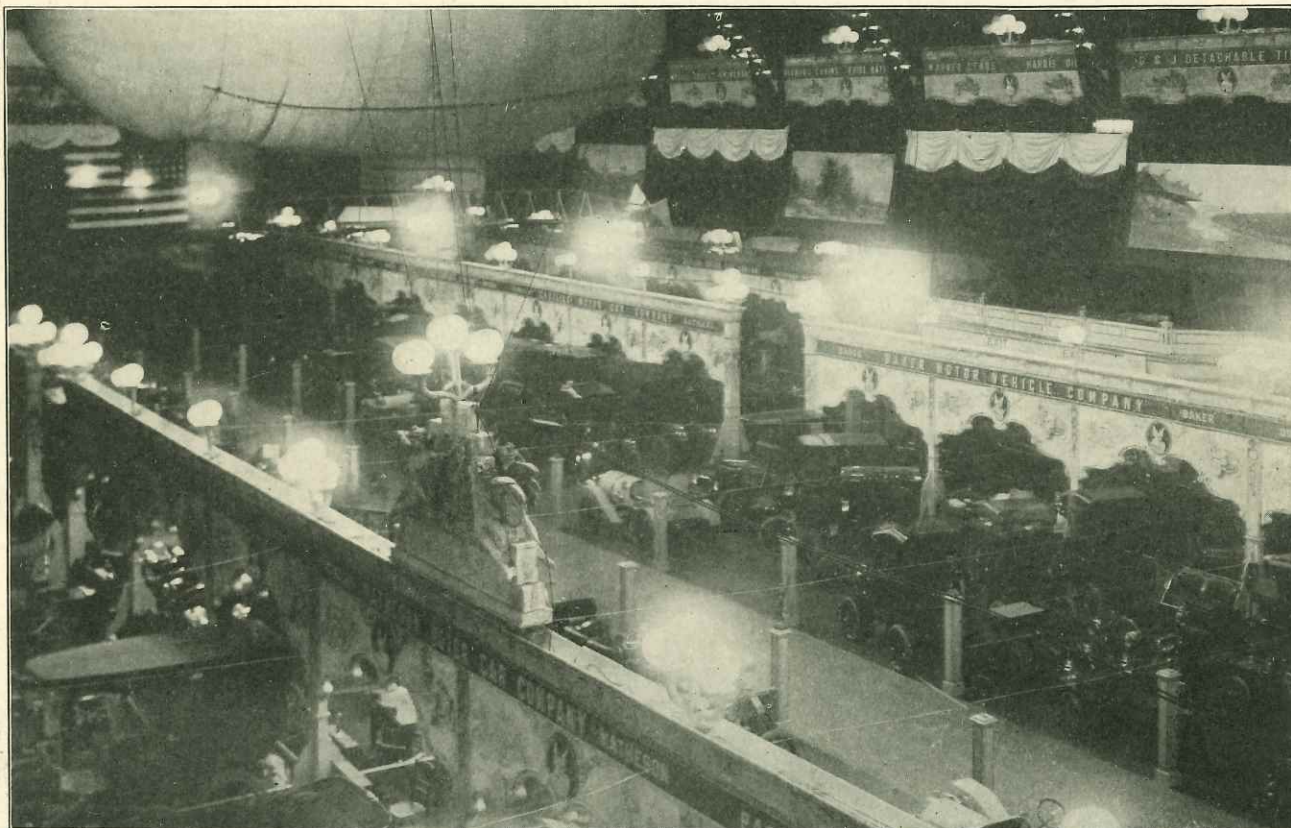
Catalog Collectors.



Exterior of Coliseum Building.



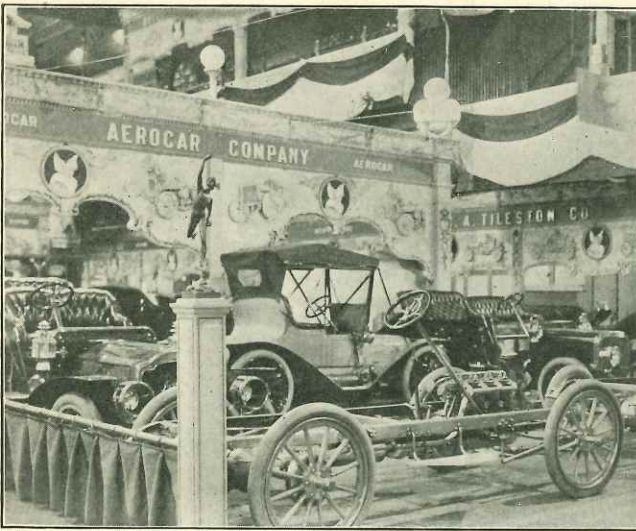
Entrance to Cafe in Coliseum.



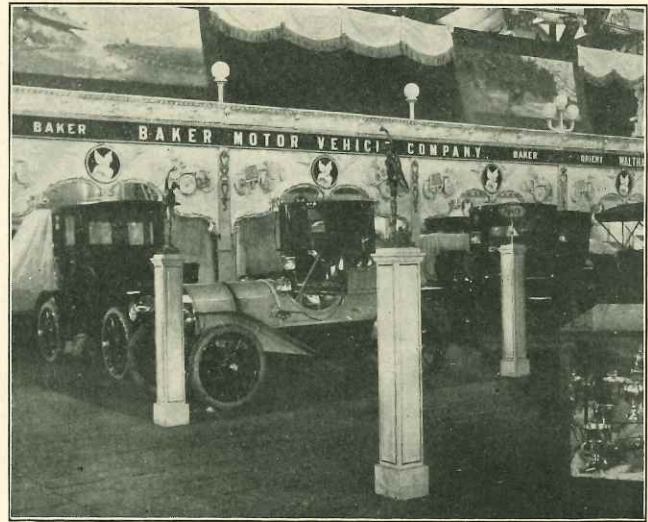
General View Main Floor Coliseum.



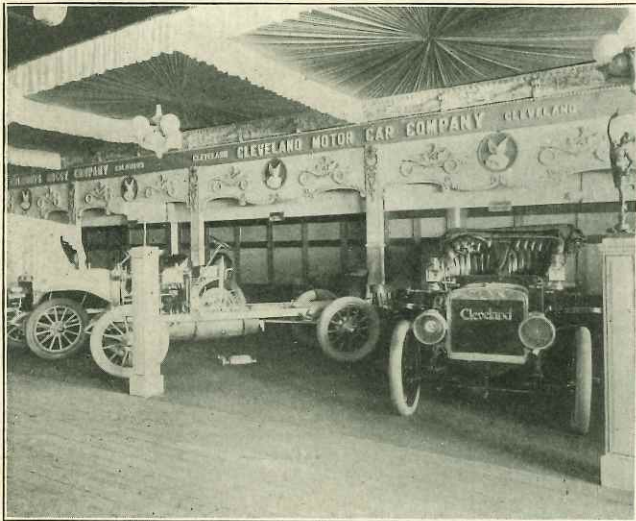
General View Armory.



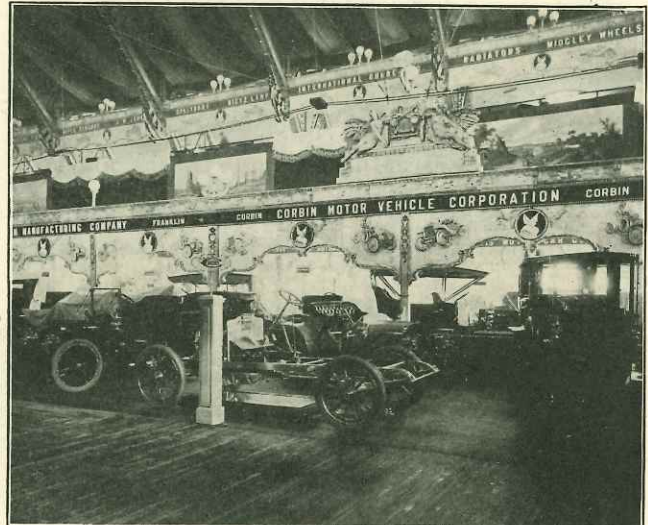
The Aerocar Exhibit.



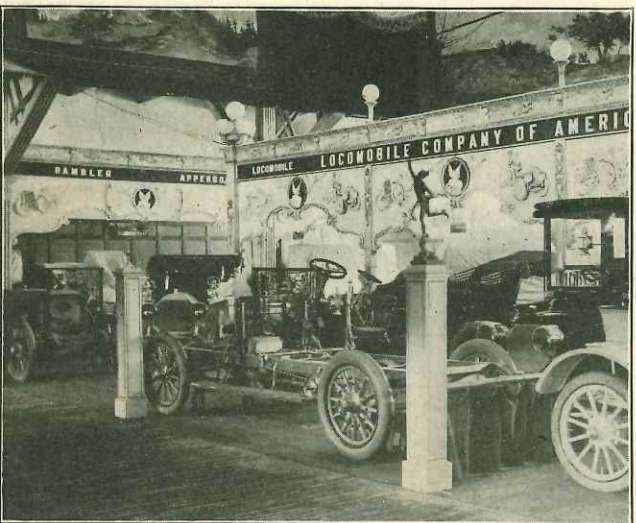
The Baker Electric Vehicles.



The Exhibit of Cleveland Cars.



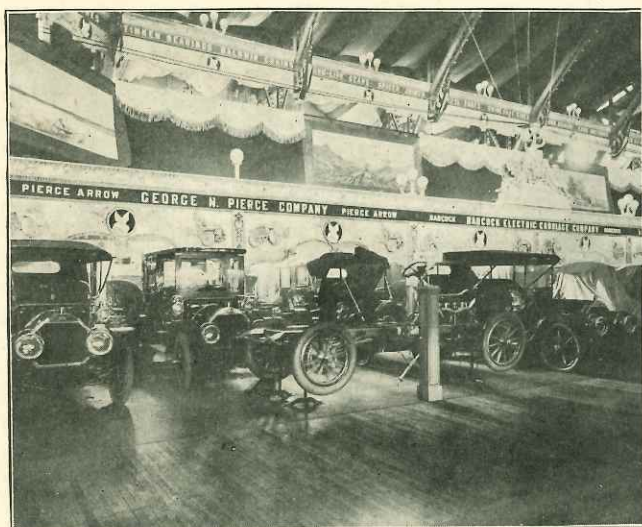
The Corbin Exhibit.



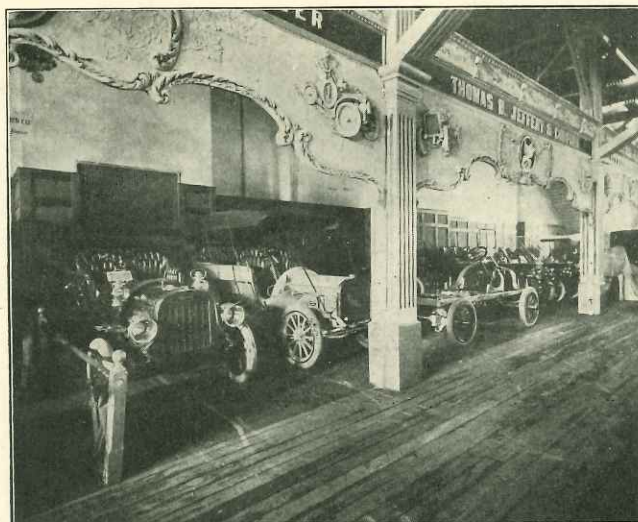
The Locomobile Exhibit.



The Packard Exhibit.



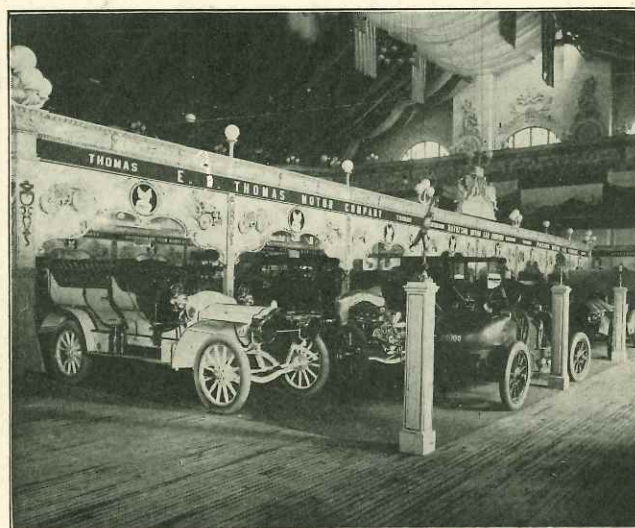
The Pierce Great Arrow Cars.



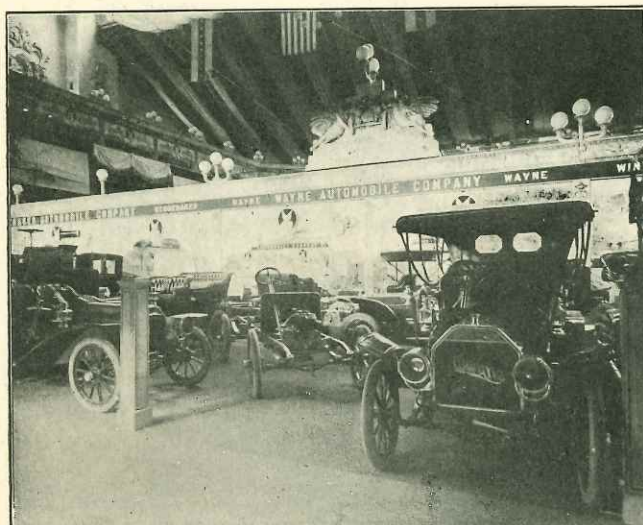
The Rambler Exhibit.



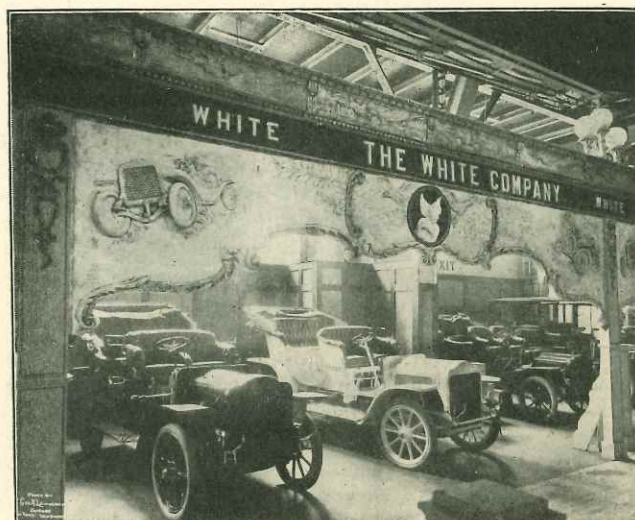
The Stearns Exhibit.



The Thomas Cars.



The Wayne Cars.



The White Steamers.

Some Motor Germs Visit the Show

By HELENA SMITH DAYTON

The Big Noise of the Motor Germ Association tooted for order. The several million germs present turned their goggled eyes toward their leader and respectfully waited for him to open the meeting.

"I am glad to see so many of you here," began the Big Noise glancing about approvingly. "I trust you came in unnoticed by the doorkeeper, though I'd like to know who has any more right to come to this big motor show than we have! We, I repeat, the motor germs who keep spreading the popu-



The Big Noise Tooted for Order.

larity of the sport and everything appertainin' to. Yet, I suppose if they knew we were using this obscure corner for our little convention they'd can us out with little ceremony. Fortunately we are the only germs immune to disinfectants—we flourish on gasoline and such beverages. It may be a good place to state, right now, that thirsty germs will find refreshment amply provided in the way of gasolene and lubricants. But let us get to business! We have come to this Motorists' Paradise to get busy. I expect every germ to do his worst. There are still a few mortals unconverted to the automobile. Go after 'em and don't let up till they adopt the faith. Our work in this world won't be accomplished until every man, woman and child is a Motorist. And, in selecting your victims—kill the women and children first. Get little Willie crying for a car and induce Mama to give-up-a-trip-to-Europe-because-she'd-rather-have-a-motor and you've got Papa easy money. Papa likes to have somebody to blame for buying one of them—confounded automobiles. But now let us go about and make observations!

"I shall ask our dear friend Professor Jargon, the lingoist, to do the talking and explain the sights," said the president, as the intangible mob started.

"Bless my carbureter, I'll be delighted," agreed Professor Jargon. "I know all there is to know about the motor game and what I don't know about one 'ain't!" Oh! By the great Magneto, excuse me a moment while I get busy with that man we just passed—the one in the fur coat. I am educating him in the motor language so he will speak it correctly if he ever does buy an automobile. I had a difficult question I wanted to hand him so he can feaze the next salesman he encounters. That's what I've trained him to do, all by myself. He's known up and down the Row as a Hard Man to Sell. Oh—no, he doesn't know anything at all about a car and he will probably end up by buying a lemon but I flatter myself he can put up a tall line of talk on the subject!" Prof. Jargon might indeed be proud of his victim for the fur-coat man was holding forth on motors in a manner so technical that a Boston child would have been bothered to understand the big words.

Professional jealousy now nearly wrecked the investigating party of germs. Each one wanted to point out its own particular achievements.



The Gasolene Germ Was Very Poor on Deportment.



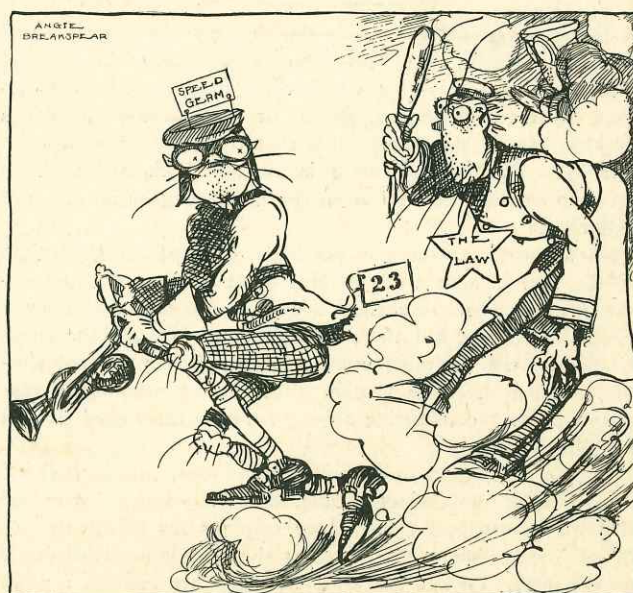
Some of the Germs That Make Motoring Contagious.

The Wishing Germs, tired of walking, had crawled into flat pocketbooks and a sad time they gave the owners from that time forth! Every time you saw a man or woman gazing wistfully at a car at the show with an "I-can't-buy-it" expression, you may take it for granted one of those unhappy Wishing Germs was curled up inside the empty wallet. The High-Price Germs were making life almost as miserable for others, who, not content with the car within their reach sighed for gold-plated and diamond studded vehicles, with pale, pink plush upholstery.

On every side the manias produced by the various motor germs were conspicuously rampant. One couldn't converse two minutes with any motorist present without finding him or her afflicted with some one particular form of motorphobia. Some were unable to talk anything but speed; others delighted in some one little piece of mechanism about the car and ran about all over the place comparing this one point in each car in turn. There were level headed mechanics who had wandered in to see the display and who were suddenly captured by the fascinations of the motor—deciding on the spot to "get into the business." There were hundreds of pretty girls ready to make matinee heroes of those who seemed to have aught to do with the cars. There was also the ostentatious person who wanted to show an easy familiarity with all things motoresque.

Then, too, there was the man who wanted a car and who wanted it quick! He wanted the motor that he wanted when he wanted it. The Prompt-Delivery germ had gotten in its fine work and made him unamenable to reason. He wanted the very car he was gazing at and he'd take it with him! Informed that no exhibit cars would be delivered until after the show closed, and, moreover, that that particular car had been sold only that morning to a man from Denver, he decided to have one built after his own ideas, for now the De-

sign-germ had taken possession of him. But at the same time he must have the car within a week sure—as he intends going to Pasadena. Won't he take a stock car? No—he won't take a stock car. And so the salesman assures him he shall have the extra awning, the doorbell and the flight of back-stairs for the hired girl all in the prescribed time, because this man's brother-in-law may buy a car, too, etc. When the germ of Design gets hold of a "prospect" the salesman often becomes confused as to whether he has an order to deliver one motor car or one completely equipped suburban cottage.



A Speed Germ, Crazy with the Heat, Ran Away.

The Best-Tired Germ waits until the prospective buyer of a car is all ready to "sign articles" then he worries the salesman's patience into a nervous decline for fear the new vehicle won't be equipped with the "right kind."

The Big Noise tried to frown down these specialists as they kept butting into nice little deals that were being fixed up on every hand, but his understudy ventured to suggest that a little healthy argument and a few decided ideas helped the sport, if anything. It made it as useful a brain developer as Algebra, just trying to get the hang of so many things as there are about an automobile. It was at this point that a most unfortunate and lamentable incident occurred which scandalized the entire germ bunch. The Gasolene germ was not quite himself! Many ladies had been obliged to elevate their noses in passing, but not until he jostled some very aristocratic Brougham germs, did anyone realize his condition. Of course the Big Noise took him aside and in a few cold, well chosen words told him he'd better can himself if he couldn't mingle with well bred people and germs inoffensively. He tried to defend himself by saying it must have been a little water he drank day before yesterday!

The Gaudy-Car germ and his devotees attracted much attention. All the ladies in the germ party were frankly bewitched by his splendor. He was a happy-go-lucky old chap as far as real works in a car went, but when it came down to color schemes he was there with the goods. Those who fell under his spell didn't care either whether a motor had more than one lung so long as the woodwork and cushions were nice and showy. They believed an automobile should be seen as well as heard.

"Things are coming our way," commented the Big Noise complacently watching his auxiliaries at work. "Everyone here has been stung by a motor germ. This vast Coliseum is for the time being an asylum filled with the Motor Mad. Probably in the world to-day there is no class of germs so powerful as we, the Motor Germs—certainly none so popular. It has come to be a case of "Motor and the world motors with you—walk and you walk alone!"

Ford Fire at Chicago

What proved to be a costly fire and one that, for a short time, threatened to develop into a still more costly and spectacular one, was that which completely gutted the handsome show rooms and garage of the Ford Motor Company's Chicago branch store at 1444 Michigan avenue early Monday morning. The big Coliseum is directly back of the Ford building and is separated from the latter only by an eighteen foot alley.

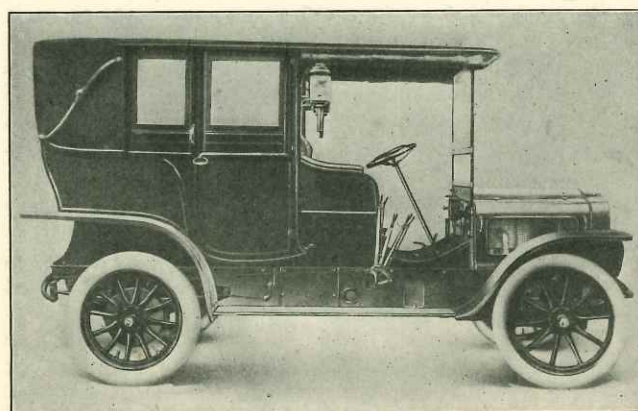
No authentic reason has yet been assigned for the origin of the fire. There were wild reports of a series of explosions, as there invariably are when an automobile or a garage is burned, but there is nothing to indicate the cause of the fire was anything more sensational than crossed electric wires, a defective heating apparatus or probably a case of spontaneous combustion arising from an oil-soaked wad of machinist's waste.

The Ford Company, for reasons of its own, had decided not to exhibit at the Coliseum, and, in anticipation of a crowd of Ford buyers, had made elaborate plans for taking care of all who come during the week, at the commodious Michigan avenue store. Of late the Ford Company has made it a point to favor show cities in the matter of shipments during show week so that anxious customers might be accorded instant

deliveries of runabouts. The first shipment for the Chicago branch arrived Sunday and consisted of a couple of Ford "big sixes" and twenty-four runabouts. Of these the sixes and fourteen runabouts were unloaded Sunday and stored in the second story of the Michigan avenue building. Sixteen others had arrived a day or two before, so there were thirty runabouts on this floor, every one of which was a total loss. Besides these there were a number of six-cylinder and other cars on this floor, being repaired. These were left a tangled mass of burned wreckage. In the garage below were a number of sixes and runabouts, amounting in all to about fifty cars, all but three of which were totally destroyed. The only cars saved were a big six which stood in the window and two runabouts, which also were near the front of the show room. Of course the ten cars which had not yet been unloaded were saved, so that Thomas Hay, the manager of the Ford store, had one six-cylinder and twelve runabouts to begin business with. Temporary quarters were secured at the corner of Fourteenth street and Wabash avenue, and at the usual opening hour in the morning the Ford salesmen were closing deals. Meantime a telephone message to the factory served to divert a trainload of runabouts scheduled for Boston, to Chicago.

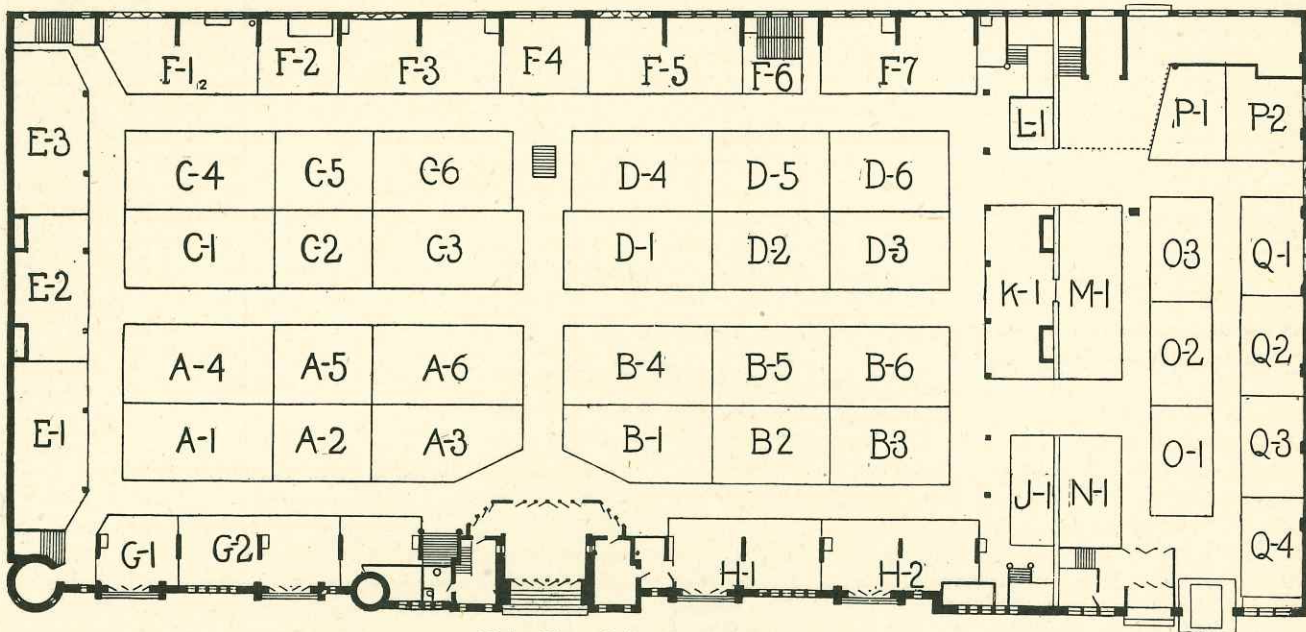
Chicago Trade Association Banquet

The first social function of automobile show week was the banquet given by the Chicago Automobile Trade Association on Wednesday evening, January 30, at the Auditorium. There were about two hundred members and guests present, and a spirit of hearty good fellowship prevailed. President Ralph Temple presided and in his opening address on "Organization," told of the advantages of unity of action which has been so ably demonstrated by the work of the association during the past year. Mayor Edward F. Dunne extended a welcome in behalf of the city to the visiting motorists. In the absence of John Farson, L. Comstock Boardman spoke on the subject "Good Roads," Ira M. Cobe, president of the Chicago Automobile Club, spoke on "Automobile Clubs," Samuel A. Miles, on "Automobile Shows," Alderman Milton J. Foreman, on "Automobiles and City Councils," Norton H. Van Sicklen, on "The Press," Walter L. Githens, on "The Automobile Business" and Joseph F. Gunther, on "Road Signs." Thomas Hay proposed a vote of thanks to President Temple for his active work in behalf of the association during the last year, and this was passed with hearty unanimity.



The White Steamer Landulet, Model G.

Exhibitors at the Seventh Annual Automobile Show Coliseum and First Regiment Armory, Chicago



Main Floor Coliseum and Annex.

Automobiles

Adams Co., Dubuque, Ia.....A 3 Armory
Aerocar Co., Detroit, Mich.....D 4 Armory
American Locomotive Automobile Co., New York..A 4 Armory
American Motor Car Co., Indianapolis, Ind....128 & 135 Annex
Apperson Bros. Auto Co., Kokomo, Ind.....E 3 Coliseum
Auburn Automobile Co., Auburn, Ind.....P 2 Annex

Aurora Motor Works, Aurora, Ill.....147 Annex
Austin Automobile Co., Grand Rapids, Mich.....E 4 Armory
Autocar Co., Ardmore, Pa.....B 2 Coliseum

Babcock Electric Carriage Co., Buffalo, N. Y.....B 5 Coliseum
Baker Motor Vehicle Co., Cleveland, O.....A 6 Coliseum
Bartholomew Co., Peoria, Ill.....O 1 Annex
Biddle-Murray Mfg. Co., Oak Park, Ill.....G 5 Armory
Blomstrom Motor Co., C. H., Detroit, Mich.....Q 1 Annex
Buckeye Mfg. Co., Anderson, Ind.....E 5 Armory
Buick Motor Car Co., Jackson, Mich.....A 1 Armory

Cadillac Motor Car Co., Detroit, Mich.....B 4 Coliseum
Chicago Coach & Carriage Co., Chicago.....G 8 Armory
Cleveland Motor Car Co., Cleveland, O.....Q 3 Annex
Columbus Buggy Co., Columbus, O.....Q 2 Annex
Corbin Motor Vehicle Corp'n, New Britain, Conn..D 2 Coliseum

Daimler Mfg. Co., Long Island City, N. Y.....G 1 Coliseum
Darracq Motor Car Co., New York.....O 2 Annex
Dayton Motor Car Co., Dayton, O.....H 1 Coliseum
De Luxe Motor Car Co., Detroit, Mich.....D 1 Armory
Deere-Clarke Motor Car Co., Moline, Ill.137, 138, 125, 126 Annex
Diamond T Motor Car Co., Chicago.....G 9 Armory
Dolson Automobile Co., Charlotte, Mich.....B 2 Armory
Dorris Motor Car Co., St. Louis, Mo.....E 8 Armory
Dragon Automobile Co., Detroit, Mich.....F 1 Armory

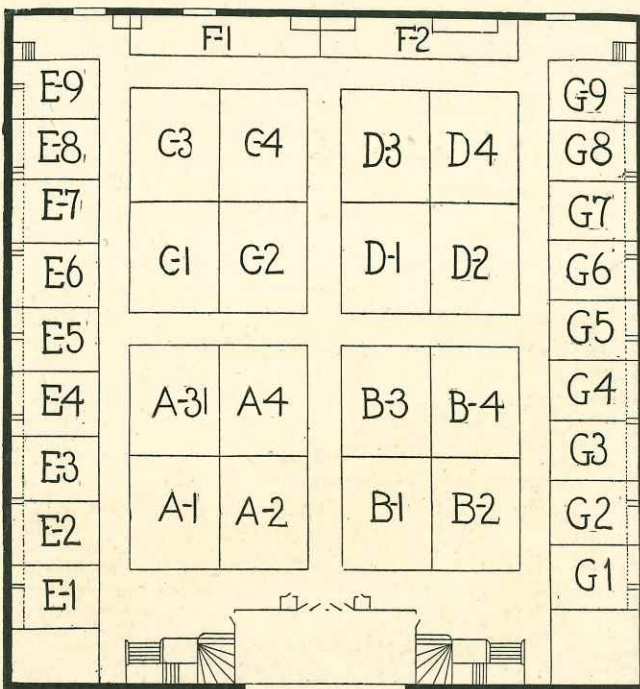
Electric Vehicle Co., Hartford, Conn.....F 3 Coliseum
Elmore Mfg. Co., Clyde, O.....B 5 Coliseum
Evansville Automobile Co., Evansville, Ind.....E 2 Armory

Forest City Motor Car Co., Massillon, O.....P 1 Annex
Franklin Mfg. Co., H. H., Syracuse, N. Y.....D 1 Coliseum

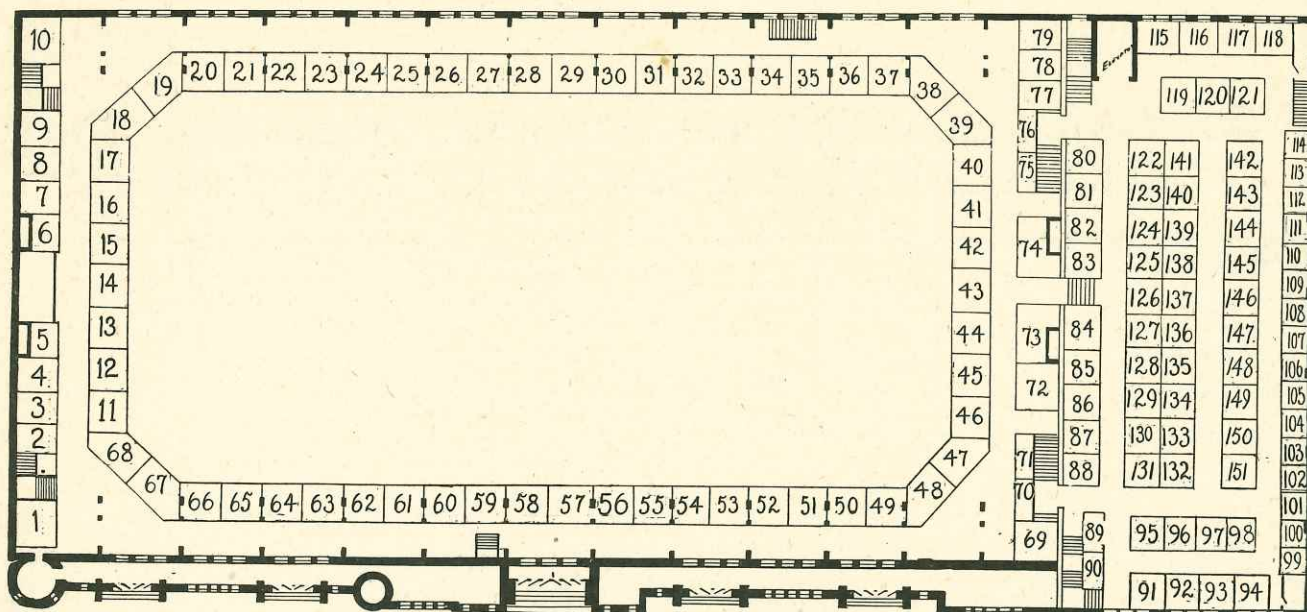
Gearless Transmission Co., Rochester, N. Y.....E 9 Armory

Harrison Wagon Co., Grand Rapids, Mich.....Q 4 Annex
Haynes Automobile Co., Kokomo, Ind.....D 3 Coliseum
Holsman Automobile Co., Chicago.....L 1 Coliseum

Jackson Automobile Co., Jackson, Mich.....D 3 Armory
Jeffery & Co., Thos. B., Kenosha, Wis.....E 2 Coliseum



Main Floor First Regiment Armory.



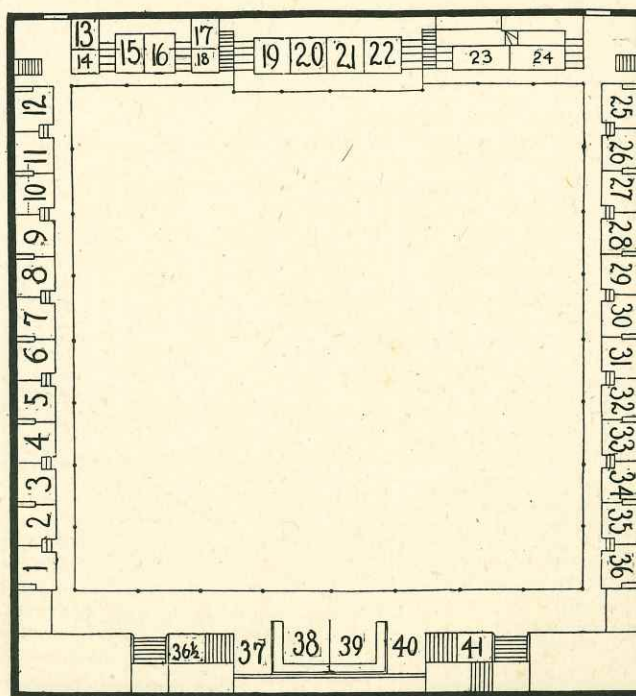
Coliseum Gallery and Second Floor Annex.

Kessler, W. S., Jackson, Mich.....150 Annex
 Kissel Motor Car Co., Hartford, Wis.....E 6 Armory
 Kline Co., The, Chicago.....129 and 134 Annex
 Knight & Kilbourne, Chicago.....B 1 Armory
 Knox Automobile Co., Springfield, Mass.....F 5 Coliseum
 Lear Automobile Co., Oscar, Columbus, O.....C 1 Armory
 Locomobile Co. of America, Bridgeport, Conn....C 1 Coliseum
 Logan Construction Co., Chillicothe, O.....E 7 Armory
 Lozier Motor Co., New York.....J 1 Coliseum
 Marvel Motor Car Co., Detroit, Mich.....127 and 136 Annex
 Matheson Motor Car Co., Wilkes-Barre, Pa.....C 5 Coliseum
 Maxwell-Briscoe Motor Co., Tarrytown, N. Y....C 3 Coliseum
 Mercedes Import Co., New York.....O 3 Annex
 Mitchell Motor Co., Racine, Wis.....K 1 Coliseum
 Moline Automobile Co., East Moline, Ill.....G 8 Armory
 Moline Pump Co., Moline, Ill.....151 Annex
 Monarch Motor Car Co., Chicago.....E 3 Armory
 Moon Motor Car Co., St. Louis, Mo.....B 3 Armory
 Motorcar Co., Detroit, Mich.....G 1 Armory
 National Motor Vehicle Co., Indianapolis, Ind....F 1 Coliseum
 Nordyke & Marmon Co., Indianapolis, Ind.....B 4 Armory
 Northern Motor Car Co., Detroit, Mich.....F 2 Coliseum
 Olds Motor Works, Lansing, Mich.....B 1 Coliseum
 Packard Motor Car Co., Detroit, Mich.....C 4 Coliseum
 Peerless Motor Car Co., Cleveland, O.....D 4 Coliseum
 Pierce Engine Co., Racine, Wis.....G 3 Armory
 Pierce Co., Geo. N., Buffalo, N. Y.....B 6 Coliseum
 Pope Motor Car Co., Toledo, O.....E 1 Coliseum
 Pope Mfg. Co., Hartford, Conn.....G 2 Coliseum
 Premier Motor Mfg. Co., Indianapolis, Ind.....C 2 Coliseum
 Rainier Co., New York.....C 2 Armory
 Rapid Motor Vehicle Co., Pontiac, Mich.....C 4 Armory
 Rauch & Lang Carriage Co., Cleveland, O.....A 2 Armory
 Reliable Dayton Mfg. Co., Chicago.....148-149 Annex
 Renault Freres Selling Branch, New York.....G 4 Armory
 Reo Motor Car Co., Lansing, Mich.....M 1 Annex
 Royal Motor Car Co., Cleveland, O.....B 3 Coliseum
 Smith Auto Co., Topeka, Kan.....F 8 Coliseum
 Smith & Mabley, Inc., New York.....C 3 Armory
 Smith & Mabley Mfg. Co., New York.....C 3 Armory
 Soules Motor Car Co., Detroit, Mich.....G 6 Armory
 Stearns Co., F. B., Cleveland, O.....D 6 Coliseum
 Staver Carriage Co., Auburn Park, Ill.....144 Annex
 Stevens-Duryea Co., Chicopee Falls, Mass.....A 4 Coliseum
 St. Louis Car Co., St. Louis, Mo.....D 2 Armory
 St. Louis Motor Carriage Co., Peoria, Ill.....F 6 Coliseum
 Studebaker Automobile Co., South Bend, Ind....A 1 Coliseum
 Thomas Motor Co., E. R., Buffalo, N. Y.....C 6 Coliseum
 Tileston & Co., A., Chicago.....F 2 Armory
 Triumph Motor Car Co., Chicago.....142-143 Annex

Waltham Mfg. Co., Waltham, Mass.....A 5 Coliseum
 Wayne Automobile Co., Detroit, Mich.....A 2 Coliseum
 Wayne Works, Richmond, Ind.....G 2 Armory
 Welch Motor Car Co., Pontiac, Ill.....N 1 Annex
 Western Tool Works, Galesburg, Ill.....E 1 Armory
 White Co., Cleveland, O.....F 7 Coliseum
 Winton Motor Carriage Company, Cleveland, O..A 3 Coliseum
 Woods Motor Vehicle Co., Chicago.....H 2 Coliseum

Parts and Accessories

Acetyvone Co., Niagara Falls, N. Y.....3 Armory Gallery
 Adapt Machinery Co., Chicago.....86 Annex
 Ajax-Grieb Rubber Co., Trenton, N. J.....6 Armory Gallery
 Alvin, F. J., Chicago.....Annex E. Balcony
 American Electric Nov. & Mfg. Co., New York.14 Coliseum Gal.
 American Motor Co., Brockton, Mass.....Annex W. Balcony
 Appliance Mfg. Co., Chicago.....East Balcony Annex
 Armac Motor Company, Chicago.....Annex W. Balcony



Gallery First Regiment Armory.

- Arnstein, Eugene, Chicago.....23 & 24 Armory Gallery
 Atwater-Kent Mfg. Co., Philadelphia, Pa.....89 & 90 Annex
 Aurora Automatic Machine Co., Aurora, Ill..16 Coliseum Gal.
 Auto. Accessories Mfg. Co., Detroit, Mich..13 to 18 Armory Gal.
 Automobile Supply Co., Chicago.....19, 20, 21 Armory Gal.
 Avery Portable Lighting Co., Milwaukee, Wis.....114 Annex
 Badger Brass Mfg. Co., Kenosha, Wis.....40, 41 Coliseum Gal.
 Baldwin Chain & Mfg. Co., Worcester, Mass..50 Coliseum Gal.
 Beckley Ralston Co., Chicago.....34 to 36 Armory Gal.
 Bemus, T. Alton, Boston, Mass.....Annex E. Balcony
 Bethlehem Steel Co., Bethlehem, Pa.....101 to 105 Annex
 Bowser & Co., Inc., S. F., Ft. Wayne, Ind..7, 8, 9 Coliseum Gal.
 Brown-Lipe Gear Co., Syracuse, N. Y.....51 Coliseum Gal.
 Byrne, Kingston & Co., Kokomo, Ind.....75, 76 Coliseum Gal.
 Chicago Battery Co., Chicago.....19 Coliseum Gal.
 Chicago Pneumatic Tool Co., Chicago.....130 to 133 Annex
 Chicago School of Motoring, Chicago.....30 Armory Gal.
 Consolidated Mfg. Co., Toledo, O.....99, 100 Annex
 Continental Caoutchouc Tire Co., New York..40 Armory Gal.
 Cooke's Ry. Appliance Co., Kalamazoo, Mich..70 Coliseum Gal.
 Cramp & Sons, Wm., Ship & En. Bldg. Co., Phila., Pa..95 Annex
 Cullman Wheel Co., Chicago.....87 Annex
 Cycle & Auto. Trade Journal, Philadelphia, Pa..8 Armory Gal.
 Dayton Electrical Mfg. Co., Dayton, O.....28 Coliseum Gallery
 Detroit Lubricator Co., Detroit, Mich.....98 Annex
 Detroit Motor Car Supply Co., Detroit, Mich..Annex W. Balcony
 Diamond Chain & Mfg. Co., Indianapolis, Ind..55 Coliseum Gallery
 Diamond Rubber Co., Akron, O.....20, 21 Coliseum Gallery
 Dietz Co., R. E., New York.....31 Coliseum Gallery
 Diezemann Shock Absorber Co., Hoboken, N. J..1 Coliseum Gal.
 Direct Drive Axle Co., Columbus, O.....Annex W. Balcony
 Dixon Crucible Co., Jos., Chicago.....84 Annex
 Dow Tire Co.....146 Annex
 Edmunds & Jones Mfg. Co., Detroit, Mich..72 Coliseum Gallery
 Electric Rubber Mfg. Co., Rutherford, N. J..4 Armory Gallery
 Electric Storage Battery Co., Philadelphia.....56 Col. Balcony
 Excelsior Supply Co., Chicago.....38, 39 Armory Gallery
 Firestone Tire & Rubber Co., Akron, O.....67, 68 Coliseum Gal.
 Fisk Rubber Co., Chicopee Falls, Mass....38, 39 Coliseum Gal.
 Fowler-Manson-Sherman Cycle Mfg. Co., Chicago.....
124 and 139 Annex
 Franco-American Auto & Supply Co., Chicago..1, 2 Armory Gal.
 G & J Tire Co., Indianapolis, Ind.....59, 60 Coliseum Gal.
 Gabriel Horn Mfg. Co., Cleveland, O.....12 Coliseum Gallery
 Gemmer Engine Co., Wabash, Ind.....97 Annex
 Goodrich Co., B. F., Akron, O.....47, 48 Coliseum Gallery
 Goodyear Tire & Rubber Co., Akron, O.44(½) 45 Coliseum Gal.
 Gray-Hawley Mfg. Co., Detroit, Mich.....Annex E. Balcony
 Gray & Davis, Amesbury, Mass.....43, 44(½) Coliseum Gal.
 Hancock Mfg. Co., Chicago.....82 Annex
 Hansel Battery & Mfg. Co., Allegan, Mich....29 Armory Gal.
 Harburg Tire Co., New York.....145 Annex
 Harris Oil Co., A. W., Providence, R. I..58 Coliseum Gallery
 Harley-Davidson Motor Co., Milwaukee, Wis..41 Armory Gal.
 Hartford Auto Parts Co., Hartford, Conn.....116 Annex
 Hartford Rubber Works, Hartford, Conn..36, 37 Coliseum Gal.
 Hartford Suspension Co., New York.....74 Coliseum Gallery
 Hendee Mfg. Co., Springfield, Mass.....122 and 141 Annex
 Hess-Bright Mfg. Co., Philadelphia, Pa.....119-121 Annex
 Hine-Watt Mfg. Co., Chicago.....17 Coliseum Gallery
 Horseless Age, New York.....12 Armory Gallery
 Hotchkin, P. M., Chicago.....91 Annex
 Hyatt Roller Bearing Co., Harrison, N. J..22 Coliseum Gallery
 Imperial Brass Mfg. Co., Chicago.....110 Annex
 International Rubber Co., Milltown, N. J..32, 33 Coliseum Gallery
 Janson, C. A., Chicago.....Annex W. Balcony
 Jones, J. W., New York.....29 Coliseum Gallery
 Jones, W. S., Philadelphia, Pa.....118 Annex
 Kilgore Air Cushion Co., Chicago.....113 Annex
 Kimball Tire Case Co., Council Bluffs, Ia....Annex E. Balcony
 Kinsey Mfg. Co., Dayton, O.....115 Annex
 Limousine Carriage Mfg. Co., Chicago.....108 Annex
 Lipman Mfg. Co., Beloit, Wis.....81 Annex
 London Auto Supply Co., Chicago.....93, 94 Annex
 Long Mfg. Co., Chicago.....53 Coliseum Gallery
 McCanna, J. F. & Edward Neely, Chicago....10 Armory Gallery
 McCord & Co., Chicago.....34 Coliseum Gallery
 Midgeley Mfg. Co., Columbus, O.....35 Coliseum Gallery
 Morgan & Wright, Detroit, Mich.....26, 27 Coliseum Gallery
 Morrison, McIntosh & Co., Grinnell, Ia.....5 Armory Gallery
 Motor Age, Chicago 37 Armory Gallery
 Motor Car Equipment Co., New York.....32 Armory Gallery
 Motor Way, Chicago 25 Armory Gallery
 Motsinger Device Mfg. Co., Pendleton, Ind..24 Coliseum Gallery
 Motz Clincher Tire & Rubber Co., Akron, O.36½ Armory Gallery
 Metal Stamping Co., New York.....Annex W. Balcony
 Muncie Automobile Parts Co., Muncie, Ind..69 Coliseum Gallery
 National Battery Co., Buffalo, N. Y.....92 Annex
 National Carbon Co., Cleveland, O.....73 Coliseum Gallery
 National Oil Pump & Tank Co., Dayton, O...11 Armory Gallery
 National Scales Corporation, New York.....31 Armory Gallery
 Never-Miss Spark Plug Co., Lansing, Mich..Annex E. Balcony
 Niagara Rubber Co., Lockport, N. Y.....Annex E. Balcony
 North Chicago Machine Co., North Chicago, Ill.....106 Annex
 N. Y. & N. J. Lubricator Co., New York....62 Coliseum Gallery
 Oliver Instrument Co., Minneapolis, Minn.....117 Annex
 Oliver Mfg. Co., Chicago.....71 Coliseum Gallery
 Pantasote Co., Chicago.....64 Coliseum Gallery
 Parsons Buggy Top Co., Chicago.....Annex W. Balcony
 Pennsylvania Rubber Co., Jeanette, Pa....18 Coliseum Gallery
 Post & Lester, Hartford, Conn.....22 Armory Gallery
 Presto-o-Lite Co., Indianapolis, Ind.....61 Coliseum Gallery
 Posser & Son, Thos., New York.....26 Armory Gallery
 Puncture Proof Tire Co., Cleveland, O.....Annex W. Balcony
 Rands Mfg. Co., Detroit, Mich.....77-79 Coliseum Gallery
 Reading Standard Cycle Mfg. Co., Reading, Pa..123 & 140 Annex
 Remy Electric Co., Anderson, Ind.....66 Coliseum Gallery
 Republic Rubber Co., Youngstown, O.....5 Coliseum Gallery
 Rose Mfg. Co., Philadelphia, Pa.....46 Coliseum Gallery
 Robinson & Son Co., W. C., Philadelphia, Pa.....112 Annex
 Rushmore Dynamo Works, Plainfield, N. J..28 Armory Gallery
 Sager, J. H., Rochester, N. Y.....96 Annex
 Schwarz Wheel Co., Philadelphia, Pa.....65 Coliseum Gallery
 Shaler, C. A., Waupun, Wis.....33 Armory Gallery
 Shelby Steel Tube Co., Shelby, O.....25 Coliseum Gallery
 Smith Mfg. Co., R. H., Springfield, Mass.....85 Annex
 Spicer Universal Joint Mfg. Co., Plainfield, N. J.....
52 Coliseum Gallery
 Splitdorf, C. F., New York.....30 Coliseum Gallery
 Sprague Umbrella Co., Norwalk, O.....2 to 4 Coliseum Gallery
 Steel Ball Co., Chicago 13 Coliseum Gallery
 Standard Lamp & Mfg. Co., Chicago.....7 Armory Gallery
 Standard Varnish Works, Chicago.....27 Armory Gallery
 Stewart & Clark Mfg. Co., Chicago.....107 Annex
 Swinehart Clincher Tire & Rubber Co., Akron, O.....
54 Coliseum Gallery
 Timken Roller Bearing Co., Canton, O.....49 Coliseum Gallery
 Turner Brass Works, Chicago.....Annex W. Balcony
 Turner & Fish Co., Chicago.....83 Annex
 Valentine & Co., New York.....11 Coliseum Gallery
 Veeder Mfg. Co., Hartford, Conn.....42 Coliseum Gallery
 Vesta Accumulator Co., Chicago.....88 Annex
 Warner Clutch Co., Chicago.....Annex E. Balcony
 Warner Gear Co., Muncie, Ind.....57 Coliseum Gallery
 Warner Instrument Co., Beloit, Wis.....63 Coliseum Gallery
 Webb Mfg. Co., Newark, N. J.....56 Coliseum Gallery
 Weed Chain Tire Grip Co., New York.....10 Coliseum Gallery
 Western Malleable Steel Co., Detroit, Mich.....80 Annex
 Wheeler, F. H., Detroit.....109 Annex
 Whiteley Steel Co., Muncie, Ind.....111 Annex
 Whitney Mfg. Co., Hartford, Conn.....23 Coliseum Gallery
 Willis Co., E. J., New York.....Annex E. Balcony
 Winchester Speedometer Co., New York....6 Coliseum Gallery
 Witherbee Igniter Co., New York.....9 Armory Gallery
 Wray Pump & Register Co., Rochester, N. Y.....
15 Coliseum Gallery

Mechanical Features of the Show

The Seventh Annual Automobile Show is a splendid demonstration of the phenomenal growth of all branches of the motor car industry. Compared with three years ago, it is almost impossible to conceive that such a radical difference in construction and general refinements could have been worked out in so short a time. This, the great national motor car show, offers marked advantages over previous exhibits, as it is here that the public is offered the opportunity of comparing the unlicensed cars with those made under the Selden patents.

Taking up the structural features of the cars as an entirety, much similarity is noted, which is carried to such a degree that it might be properly termed standardization. That the cars are generally larger throughout is apparent from the fact that the wheel base of the average car for 1907 is from 102 to 126 in., while some chassis are shown with wheel bases of 134 in. Motors with four cylinders, with a few exceptions, is the general type of construction that has been adopted by the manufacturers. The exceptions are to be found in cars in which the two-cylinder type of motor is used, there being about a dozen of this type; the six-cylinder type of construction, which is conspicuous only by the small number that are shown, some four in all; the single-cylinder motor, which is almost extinct.

Horsepower has a range of from 12-14 to 50-70. A feature here made notable is, with one exception, the low horsepower rating given the motors with six-cylinders. The type of brake that is used is almost universally of the internal expanding and external contracting on rear hubs, while many cars are equipped with band brakes on sprocket shafts, also propeller shaft, many types of transmission brakes also being used. In a few instances a water-cooled brake, a shoe and pulley, an electric and pneumatic are shown. The system of cooling adopted is principally water, there being less than fifteen air-cooled motors. With a few exceptions, the circulating pump, with fan auxiliary is used, the exceptions being those in which a radiator is used in connection with thermo syphon.

The ignition system is almost universally of the jump spark type, some motors being equipped with double sets of plugs, while others are equipped with the make and break, in connection with the jump spark. Magnetos are coming into more general use, as are also storage batteries. However, the dry batteries are by no means extinct. Many cars are equipped with three systems of electrical source, while some rely entirely on batteries and others on batteries and magneto.

There seems to be a general tendency towards shaft drive, this type being largely in the majority. However, the double side chain is to be found on many of the larger cars, while a few light runabouts have the single chain drive. One exception to the types mentioned is that of clutch-driven hubs, which is to be seen on one runabout.

Selective sliding gear type for transmission, with a few exceptions, is universally used, although the progressive sliding gear type is largely in evidence. The exceptions are the planetary type, of which there are less than fifteen, and friction, being found on five different makes of cars.

Some few cars are equipped with a self-starting device,

but its general adoption seems some distance in the future. Valves appear to be little changed, excepting that larger openings have been provided, with closer graduation as to timing. In arrangement of valves, three types are much used: Placing the valves in the heads of the cylinders; inlet and exhaust on same side of the motor; inlet on one side and exhaust on the other, several combinations in addition being worked out of these three systems. There is still a divided opinion among engineers as to the type offering the maximum good qualities.

A noticeable feature in this connection is that the foreign-built cars use the opposite side system of valve arrangement, while the American designer favors the same side system. Operating mechanism for valves is also variable, both the push rod and rocker arm being much used, with the push rod type gaining in favor.

Pumps for circulating the cooling agency are almost universally of the gear-driven geared type. There is a considerable variation in lubricating systems, the force feed and mechanical oiler greatly predominating. This naturally includes the splash system, which is classed as an auxiliary. Few motors are now to be seen that rely entirely upon the splash system for oiling. Several cars are equipped with hand or foot oil pumps, in addition to the adopted system of lubrication. A further feature is that of carrying one of the leads from the oiler to bearings which formerly were oiled by grease and to the transmission which heretofore required frequent filling by hand. There is probably no detail of the power plant that has received an equal amount of attention in the last year as that of proper and adequate lubrication. There is nothing of more importance in the entire equipment than the system of lubrication and there appears to be still further opportunities for efforts along this line.

Types of carbureters are almost as numerous as the cars themselves, yet it is a noticeable feature that, aside from a few so-called special designs and those made by the builder, the types most used are of some three or four standard makes. Although the manufacturers of these standard generators have reached a high state of perfection in their work, there is little doubt but that the next twelve months will see marked changes in this all-important unit of the gas engine, which is only second in importance to lubrication. With a highly efficient carbureter, together with an almost perfect oiling system and a simplified but positive ignition system, almost any kind of an explosive motor will develop a most creditable showing of horsepower. Add to these refinements a more simplified type of gear transmission and operation and the motor car will have reached a state akin to perfection.

This is the hope and aim of every designer in the motor car industry and the motorist can reasonably expect that the next two years will see all this in reality, if the rapid advancement made in the past is significant. While opinions still differ as to the best type of motor construction, there is a growing tendency toward the adoption of cylinders cast separately and in pairs which provide for adequate bearing surfaces between each arm of the crank shaft. The floating rear axle is still popular, although it is not as yet of universal adoption. Many cars are equipped with the transmission axle, an equal number having the transmission variably placed, from close to the fly-wheel clutch to as far as possible to the rear. This

varies, naturally, depending upon whether a shaft is used as final drive or side chains from a differential shaft.

Steering gears show some marked improvement, which is principally that of heavier construction. There still remains, however, the lost motion in the turning movement, which sometimes proves very annoying. It is here that marked improvement is needed that will at all times be positive and reliable. Gasolene tanks placed at the rear end of the frame and having the same under pressure, by which a supply of the fuel is assured, are to be seen on several cars. Gravity feed, however, is much used, while, in a few instances, the gasolene is pumped from the tank and thence to the carbureter. All three systems have good points, but possibly that of the gravity feed offers the least trouble.

Maxwell Cars in Motor Fuel Test

An automobile test run of far-reaching importance both to the motor and scientific world has just been completed by three Maxwell two-cylinder 20-horsepower touring cars. On the morning of January 28, three cars taken from stock started from Columbus Circle, New York, for Boston, Mass., one using denatured alcohol, one kerosene and the third gasolene. The purpose of this run was to determine the comparative economy and utility of the three different hydro-carbons named. The principal interest in this test naturally centered around the denatured alcohol results. In order to establish the grade of the material used, the alcohol was bought from Wm. S. Gray, a William street chemist, for 37 cents a gallon, and was not denatured by an amateur. The gasolene motor fired without priming, and after it had been running sufficiently to promote the best vaporizing temperature it started as readily as a motor using gasolene fuel when cranked.

It was necessary to operate the motor intended for the use of kerosene with gasolene to attain the high vaporizing temperature necessary, but when this had been done, the kerosene gave surprisingly good results throughout the trip.

In order to make the test as inclusive as possible, each car was furnished with an observer and an accurate record was kept of the details of the trip including the quantity and quality of fuels used.

The alcohol car was driven by H. A. Grant of Tarrytown, who had charge of the arrangements for the test. Chas. Fleming drove the gasolene car and William Toner, the kerosene car. As this test was made for the purpose of solving the problem of the proper hydro-carbons for use in motor cars, no attempt at speed or endurance was made.

The three cars reached Hartford, Conn., on the evening of the day of the start and the test was more satisfactory than any of the projectors of the trial had anticipated. The stock cars furnished for the test by the Maxwell-Briscoe Motor Company of Tarrytown, N. Y., stood this pace remarkably well and the run from New York showed their remarkable adaptability to the use of the three carbons. Surprisingly good results were shown by the kerosene car. From New York to Hartford, considerable snow was encountered and in consequence the roads were heavier and the running time considerably greater. At Bridgeport, Conn., an hour and a half stop was made for lunch and to refill the fuel tanks.

The following morning the three cars continued their

run in a heavy snow storm which considerably delayed their progress. The greater part of the route lay through snow on country roads that reached nearly to the axles.

The cars kept together during the run and the only trouble that caused delay was with the tires. Two rear shoes had to be replaced, one at Springfield and the other at Worcester, owing to the fact that the use of chains for protection of tires and skidding was found to be absolutely impracticable, the chains snapping continuously being more of a nuisance than a help. In fact, common rope of a proper thickness wound in and out around the tire and the spokes was found much cheaper and more efficient.

Upon the arrival of the party at Worcester on the evening of January 29, it was met by representatives of the Worcester Automobile Club who entertained the tourists at the club for dinner. On the following morning, the three Maxwell cars continued their run to Boston. They reached the headquarters of the Bay State Athletic Association, Boston, at 1:15 p. m. January 30, with a clean record. The run from Worcester to Boston was fully as arduous as it was before from Springfield to Worcester. Several grades were encountered and in places the snow



Start of the Maxwell Fuel Test.

was so deep as to make the roads almost impassable. No delay was encountered other than an hour's stop at Marlborough in search of lubricating oil. This was the only stop made along the route for the use of the three cars as the party carried with them a quantity of fuel sufficient to last throughout the trip. This action was necessary to avoid the possibilities of getting fuel of such a poor quality as to injure the results of the test.

Although this test of the economic value of the three kinds of fuels used was made unnecessarily severe because of the weather conditions the three cars made the entire trip without accident. The report soon to be made by the committee on inspection will undoubtedly prove of great value to the automobile world.

It is apparent, however, that the Maxwell cars have competed successfully at the performance which reflects credit both on their mechanical excellence and their adaptability to the use of the three hydro-carbons used as fuels.

In consideration of the difficult conditions under which the tour was continued, it is evident that the use of alcohol and kerosene is perfectly practicable for automobile use.

Credit for the success of this test run is due to the drivers of the three cars, particularly to H. A. Grant, under whose direction the trial was made.



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We want our readers to always feel that The Motor Way is their paper, and that what interests them interests its publishers and subscribers. We will therefore appreciate most highly any communications, questions, experiences or suggestions, or marked copies of local papers containing items of news pertaining to the interests of motorists.

TO ADVERTISERS

Below we quote proof of the circulation of The Motor Way for February issue, through which 12,000 of America's most progressive motorists are reached.

Sworn Circulation, 12,150 Copies

Chicago, Ill., 12 M. Feb. 4, 1907.

I hereby affirm that the edition of The Motor Way for February, 1907, comprises 12,000 copies and that three 16 page forms have been printed up to this hour, the press run on each form being 12,150 copies.

F. S. Kenfield,
President The Motor Way.

I certify that to my personal knowledge, the above statement is correct.

Walter A. Brightmore,
Superintendent Press Room,
The Motor Way.

County of Cook, State of Illinois, ss. Subscribed and sworn to before me this 4th day of February, 1907.
[Seal] Harry E. Wright,
Notary Public.

My commission expires 1910.

The Wilderness of Bad Roads

THE progress and development of the good roads movement during the past year has been wonderful and the prospects are that the coming year will see immense strides in the direction of new and improved highways. The motoring organizations have done much to arouse the enthusiasm of the people in this work, and of late the farmers have taken hold and given a good substantial push which has helped materially.

The lawmakers in many states are beginning to realize that this question is one of importance and they are now ready to give it the consideration it merits. Money that has been appropriated by the state government for the improvement of the roads will be spent in an intelligent manner this year, and the results accomplished will be more satisfactory than heretofore.

While bad road conditions affect the farmer first and appear to be most injurious to him, the injury does not stop there. Any condition that is hurtful to the farmer affects every other individual and industry in a greater or lesser degree. The bad roads make it impossible for the farmer to haul his product to town and this depresses local trade; the merchant buys less from the wholesaler, the railway traffic is cut down, and a partial paralysis of business occurs—all as a result of the impassable country roads.

The motoring fraternity must take the lead in the good roads movement, because this fraternity now includes the manufacturer, the business man and the farmer. The motor car has become the common carrier for all classes of people, it is hauling the freight in the cities and ere long it will be conveying the farm products to the cities, and in the not far distant future we will see it doing the plowing and cultivating in the fields. The motor car is destined to be the Moses to lead the people out of the wilderness of bad roads. Let the motorists, then, go to work with a will and to them shall be given the full meed of credit for the good work done.

The Elixir of Business

THERE come times in the life of every man when he feels discouraged and dissatisfied and all the world looks dark to him. Perhaps his business is flourishing, orders are piling up and the profit side of the ledger is filled with figures, yet despite this state of affairs he is not content. He can look about him and see other men in the same field, who are apparently more prosperous and who are doing a larger business and he grows disheartened as he discovers that he is not the leader.

It is when in this state of mind that a man needs a tonic—something that will invigorate, arouse and strengthen him, so that he will again enter the battle of business with renewed energy and ambition to win greater victories. At such a time as this the trade journal will prove the greatest panacea.

The stimulus obtainable from reading and digesting the contents of the trade journal is wonderful. The experiences of others in similar lines will give him ideas and suggestions that he can apply with profit to his own business. The technical articles will always have something instructive in them and even if they tell something he already knows, they may brush him up on some forgotten point or he may learn some new detail that will place the matter before him at a different angle than that from which he viewed it before. While there is

nothing new under the sun, there is plenty of old material to work on in gleaning from the field of knowledge, and some pure gold may be discovered in the delving of others.

In the news stories relating to his business he will find mirrored the struggles, hopes, ambitions, successes and failures of his fellow workers and these will serve to inspire him to renewed effort.

In practically every number of the trade journal will be found something of value. It may be a leading article or it may be a two-line item which will solve the problem that has been a source of worry. In either case it lightens his pathway and he is well paid for the time spent in looking through the pages of the paper.

The man who faithfully reads all the trade papers he can obtain will be the best posted, the most contented and the most successful in his particular line of work. The trade paper awakens his ambition, arouses him to action and brings new life to his business. It is the elixir of his business.

The Spirit of Motor Car Racing

NOT unlike other sports, there is a legitimate form of racing for the automobile that would appeal to the motorist as well as to the public. While the objectionable features, such as pool selling, may have a tendency to limit widespread enthusiasm, nevertheless, those interested in a sport which is in every way conducted purely for the sake of the facts that may be brought out are to be found in large numbers.

It is only reasonable to suppose that many manufacturers of motor cars, both for pleasure and racing, are not over-anxious to take the chances of making a poor showing at such prominent demonstrations as those of Ormond Beach. Naturally, a good record is a splendid advertisement for the maker of the car that comes through with colors flying, but for the maker whose car establishes a poor record, or, still worse, no record at all, the free advertisement which his car is sure to receive is of inestimable damage to the future of his product.

This practically robs the maker, for the time being, of making perfectly legitimate claims of superiority over a car which may have accidentally made a better showing. Much time must also be consumed in explaining the why and the wherefore of a poor record which, unfortunately for the maker, is little believed by the ever-doubting public. Looking at the subject from the outside, it would seem better if the manufacturers were to leave the racing to the owners of the cars. This would at least give them the benefit of the doubt, in most cases, should the car or cars made by them come through the test with little to their credit.

Driving cars at the rate of over 125 miles per hour is little short of a race with death for the operator and in which death has proven many times the victor or left behind scars as a vivid reminder with its contestant that even motor cars or the builders are not infallible.

It is to be hoped that the next races held on the most rapid speedway in the world will be more of a success than those held recently at Ormond. Safe and sane judgment will do more to make these races of greater interest, the day having passed when it became necessary to take a long journey to see men crippled for life or killed in an effort to establish a world's record for the car they might be driving either for an employer or in their own behalf. Laws are in force which place a restraint upon the would-be suicide and which like-

wise interpret the taking of life as murder in a greater or less degree, according to the circumstances.

Discriminating Against Foreign Cars

JUST why foreign cars should be allowed to come into the United States free of duty for racing purposes and cars imported for exhibition at the automobile shows should have to pay the regular duty, is a matter not readily accounted for by logical reasons and a show of justice. Under rulings made by the treasury department a foreign concern may send its cars here for racing under bond and if the machines are sent out of the country within a certain time,—either three or six months—the amount of the bond is refunded. In the same way foreign cars can be brought in under bond for exhibition without payment of duty unless they are sold and remain in this country. But the New York appraisers and collectors can find no authority in the laws or department rulings for admitting cars temporarily for display at the annual automobile shows free of duty. Such a discrimination appears to lack common sense and certain of the importers are well justified in making complaints. Looked at from a patriotic standpoint, our citizens will benefit more from close inspection of engineering and construction as revealed by foreign exhibits at the shows than by all the racing that imported machines will do.

Certain persons possessing an inner knowledge of affairs assert that the conditions do not exist without a reason; that, in fact, it is to the interest of the manufacturers and importers of the most popular makes of French, German and Italian cars to preserve the present conditions.

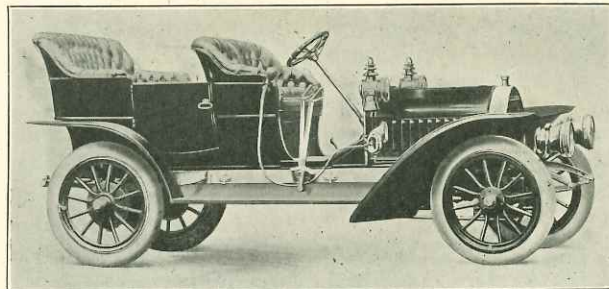
It is pointed out that, in the first place, admission of their cars free for racing purposes helps the firms that are able to stand the expense of building and racing special machines to gain a great deal of advertising while avoiding the payment of the heavy tax of a 45 per cent ad valorem duty. On the other hand, there is already such a demand for their cars that they are always behind many months on their deliveries and they very rarely if ever send a car here that is not already sold to a customer who has made a large cash payment sufficient to cover the duty and who stands ready to pay the balance upon delivery of the machine on this side. Even the special chassis and fully equipped cars that are displayed at the shows are either already sold or are almost certain to be sold during the shows. And since they will remain in this country in either event, the duty would have to be paid.

Obviously, these makers and importers have no serious fault to find with laws and rulings that either benefit them or cause them no inconvenience while at the same time operating to handicap their smaller competitors. The financially (and politically) weaker makers and importers of the lesser known makes of foreign machines, wishing to establish a market on this side, would be glad to take advantage of the privilege of bringing in their new models for exhibition and then re-exporting them, which could be done at moderate cost if nearly half the list price of the car or chassis did not have to be paid to the custom house upon arrival. Builders of the more obscure cars—of which there are many in Europe nearly or quite as good as the much-heralded popular makes familiar on this side—do not enjoy the ready market for their products that the more famous makers have developed, and cannot afford to run the chance of sending their machines to the shows and, after paying duty, take them back home unsold.

THE CARS

THE AUTOCAR COMPANY, ARDMORE, PA.

CAR—Autocar.
MODEL—Type XIV, touring body.
PRICE—\$3,000.
WEIGHT—2,590 pounds.
SEATING CAPACITY—5.
MOTOR—Four-cylinder vertical.
HORSEPOWER—30 at normal speed.
VALVES—Mechanically operated.
COOLING—Radiator, pump and fan.



IGNITION—Jump spark storage battery.
CARBURETER—Holley.
LUBRICATION—Mechanical force feed.
TRANSMISSION—Sliding gear.
DRIVE—Bevel gear.
WHEEL BASE—110 in., Tread, 56 in.
CLUTCH—Autocar patented.
BRAKES—Double set on rear drums.
CONTROL—Spark and throttle.

THE AUTOCAR COMPANY, ARDMORE, PA.

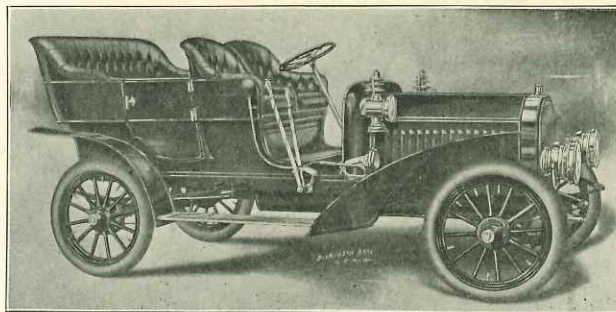
CAR—Autocar.
MODEL—Type XV, runabout.
PRICE—\$1,200.
WEIGHT—1,475 pounds.
SEATING CAPACITY—3.
MOTOR—Two-cylinder horizontal opposed.
HORSEPOWER—12-14.
VALVES—Mechanically operated.
COOLING—Radiator, pump and fan.



IGNITION—Jump spark-storage battery.
CARBURETER—Autocar patented.
LUBRICATION—Mechanical force feed.
TRANSMISSION—Sliding gear.
DRIVE—Bevel gear.
WHEEL BASE—81½ in.—Tread 56 in.
CLUTCH—Double set on rear drums.
CONTROL—Spark and throttle.

BUICK MOTOR COMPANY, FLINT AND JACKSON, MICH.

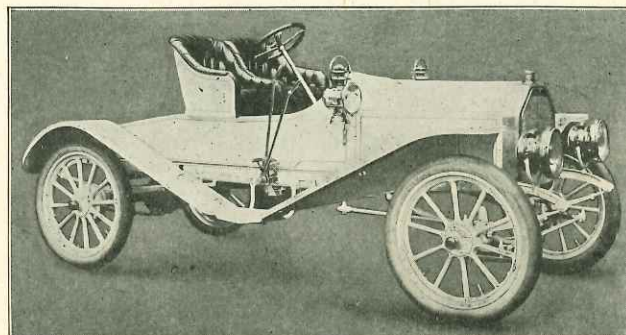
CAR—Buick.
MODEL—D, touring car.
PRICE—\$2,200.
WEIGHT—2,000 pounds.
SEATING CAPACITY—5.
MOTOR—Four-cylinder vertical.
HORSEPOWER—25-30.
VALVES—Both sides port.
COOLING—Radiator, pump and fan.



IGNITION—Jump spark-storage battery.
CARBURETER—Special design.
LUBRICATION—Mechanical force feed.
TRANSMISSION—Sliding gear.
DRIVE—Bevel gear.
WHEEL BASE—102 in., Tread 56.
CLUTCH—Multiple disc.
BRAKES—Hub and shaft.
CONTROL—Spark and throttle.

BUICK MOTOR COMPANY, FLINT AND JACKSON, MICH.

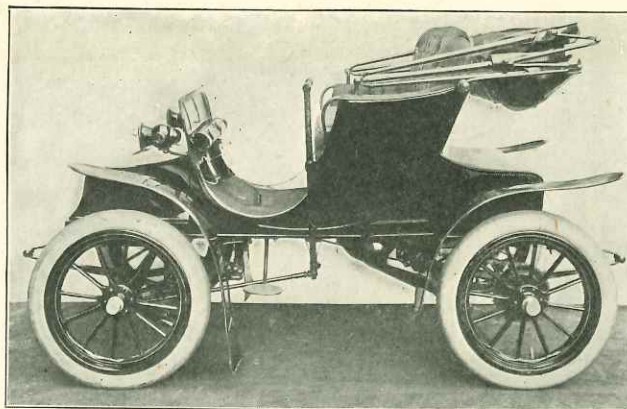
CAR—Buick.
MODEL—K, runabout.
PRICE—\$2,000.
WEIGHT—1,800 pounds.
SEATING CAPACITY—2.
MOTOR—Four-cylinder vertical.
HORSEPOWER—25-30.
VALVES—Both side ports.
COOLING—Radiator, pump and fan.



IGNITION—Jump spark-storage battery.
CARBURETER—Special design.
LUBRICATION—Mechanical force feed.
DRIVE—Bevel gear.
WHEEL BASE—106½ in., Tread, 56 in.
CLUTCH—Multiple disc.
BRAKES—Rear, hub and shaft.
CONTROL—Spark and throttle.

COLUMBUS BUGGY CO., COLUMBUS, O.

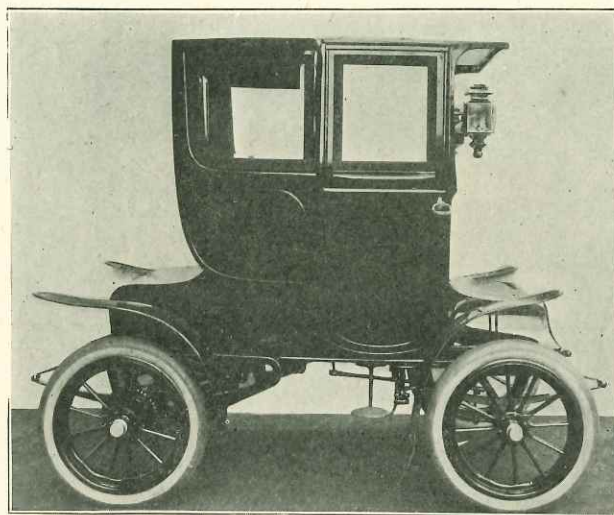
CAR—Columbus
 MODEL—No. 1000, electric
 stanhope-phaeton, with top.
 PRICE—\$1,600
 WEIGHT—1,650 pounds.
 SEATING CAPACITY—2
 HORSEPOWER— $1\frac{1}{2}$
 CURRENT SUPPLY—Storage
 battery
 LUBRICATION—Grease all
 roller and Hess-Bright bear-
 ings
 DRIVE—Double chain, one to
 each rear wheel



WHEEL BASE—69 in.
 TREAD—4 ft. 2 in.
 TIRES—Front 30 by $3\frac{1}{2}$ in.,
 rear, 30 by $3\frac{1}{2}$ in.
 SPEED—5 to 20 miles per
 hour
 STEERING—Side lever
 CONTROL—Improved radical
 type, with reverse and speed
 changes combined
 BRAKES—Jack shaft and on
 each rear hub
 SPRINGS—Front half-platform,
 rear, full elliptical
 FRAME—Pressed steel

COLUMBUS BUGGY CO., COLUMBUS, O.

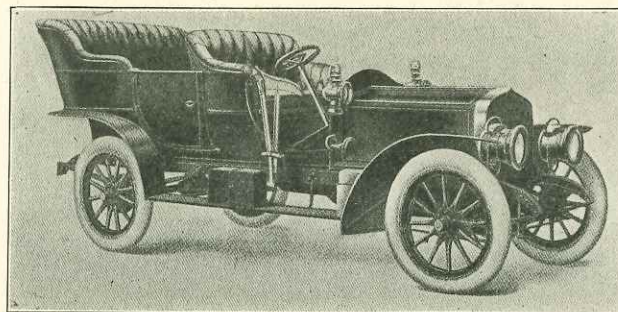
CAR—Columbus
 MODEL—No. 1002, electric
 coupe
 PRICE—\$1,900
 WEIGHT—1,650 pounds
 SEATING CAPACITY—2
 MOTOR—Sub-frame under seat
 HORSEPOWER— $\frac{1}{2}$
 CURRENT SUPPLY—Storage
 battery
 LUBRICATION—Grease all
 roller and Hess-Bright bear-
 ings
 DRIVE—Double chain, one to
 each rear wheel
 WHEEL BASE—69 in.



TREAD—4 ft. $2\frac{1}{2}$ in.
 SPEED—5 to 18 miles per
 hour
 STEERING—Side lever
 CONTROL—Interior driven.
 Improved radical type, with
 reverse and speed changes
 combined.
 BRAKES—One on jack shaft
 and one on each rear wheel
 SPRINGS—Front half-platform,
 rear, full elliptical
 FRAME—Pressed steel
 TIRES—Front 30 by $3\frac{1}{2}$ in.,
 rear 30 by $3\frac{1}{2}$ in.

CORBIN MOTOR VEHICLE CORPORATION, NEW BRITAIN, CONN.

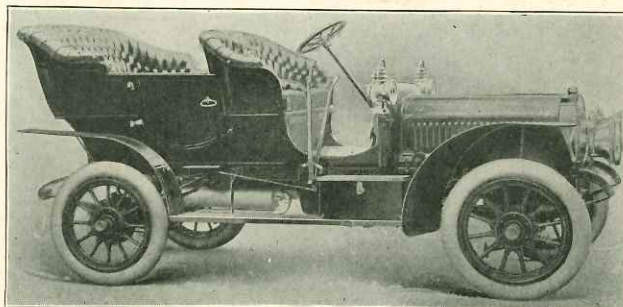
CAR—Corbin
 MODEL H, touring car
 PRICE—\$2,500
 WEIGHT—2,200 pounds
 SEATING CAPACITY—5
 MOTOR—Four-cylinder vertical
 HORSEPOWER—24 at 1,200 r.
 p. m.
 VALVES—In cylinder heads,
 mechanical
 COOLING—Air and fan
 IGNITION—Jump spark-stor-
 age battery



CARBURETER—Float feed
 type
 LUBRICATION—Sight feed and
 oil bath
 TRANSMISSION—Sliding gear
 DRIVE—Bevel gear, universal
 joints
 WHEEL BASE—108 in., Tread,
 56 in.
 CLUTCH—Leather faced cone
 BRAKES—Double set on rear
 hubs
 CONTROL—Throttle and spark

CADILLAC MOTOR CAR COMPANY, DETROIT, MICH.

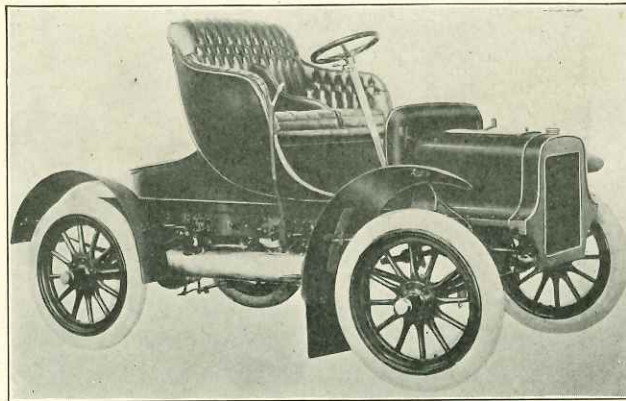
CAR—Cadillac
 MODEL—H, touring car
 PRICE—\$2,500
 WEIGHT—Not given
 SEATING CAPACITY—6
 MOTOR—Four-cylinder vertical
 HORSEPOWER—30
 VALVES—In cylinder heads
 COOLING—Radiator, pump and
 fan
 IGNITION—Jump spark-stor-
 age battery



CARBURETER—Float feed
 type
 LUBRICATION—Automatic
 splash system
 TRANSMISSION—Planetary
 type
 DRIVE—Bevel gear
 WHEEL BASE—102 in., Tread,
 56 in.
 CLUTCH—Double float disc
 BRAKES—Double set on rear
 drums
 CONTROL—Automatic govern-
 or spark lever

THE CADILLAC MOTOR CAR COMPANY, DETROIT, MICH.

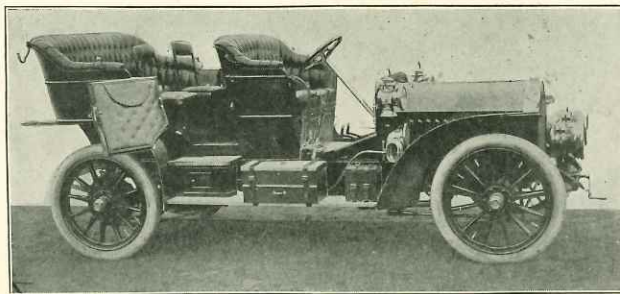
CAR—Cadillac
 MODEL—K, runabout
 PRICE—\$800
 WEIGHT—Not given
 SEATING CAPACITY—2
 MOTOR—One-cylinder horizontal
 HORSEPOWER—10
 VALVES—In cylinder heads
 COOLING—Radiator and pump
 IGNITION—Jump spark dry battery



CARBURETER—Cadillac type
 LUBRICATION—Force feed
 TRANSMISSION—Planetary, two speeds
 DRIVE—Chain
 WHEEL BASE—76 in., Tread, 56 in.
 CLUTCH—Flat disc
 BRAKES—Double acting on differential
 CONTROL—Throttle and spark

ELECTRIC VEHICLE COMPANY, HARTFORD, CONN.

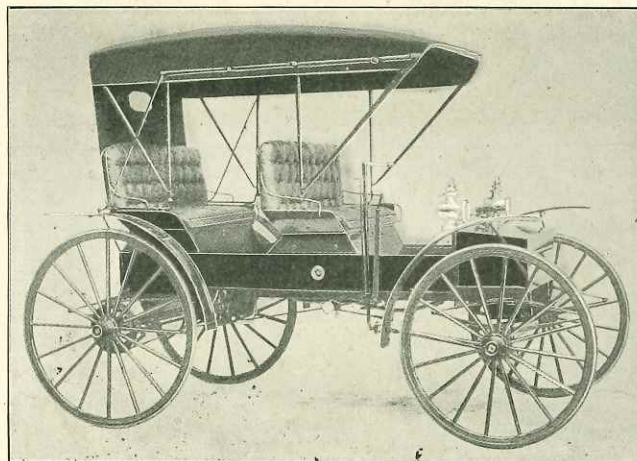
CAR—Columbia
 MODEL—XLIX, touring car
 PRICE—\$4,500
 WEIGHT—3,400 pounds
 SEATING CAPACITY—7
 MOTOR—Four-cylinder vertical
 HORSEPOWER—40-50
 VALVES—On same side, mechanical
 COOLING—Radiator, pump and fan
 IGNITION—Jump spark-battery or magneto



CARBURETER — Combination automatic
 LUBRICATION—Sight feed and splash
 TRANSMISSION—Selective sliding gear
 DRIVE—Double side chain
 WHEEL BASE—112 in., Tread, 55 in.
 CLUTCH—Cone, leather face
 BRAKES—Double set
 CONTROL—Spark and throttle

THE RELIABLE DAYTON MOTOR CAR CO., CHICAGO.

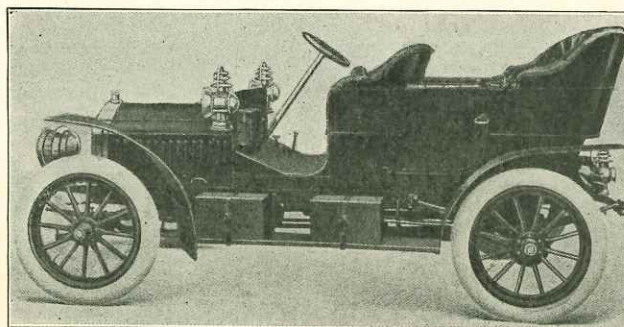
CAR—Reliable Dayton.
 MODEL—D, surrey.
 PRICE—\$700.
 WEIGHT—1,250 pounds.
 SEATING CAPACITY—Four.
 MOTOR—Two-cylinder horizontal.
 CONTROL—Spark and throttle.
 HORSEPOWER—15 at 1,000 r. p. m.
 VALVES—Mechanical.
 COOLING—Pump and radiator.



IGNITION—Jump spark, double coil.
 CARBURETER—Schebler.
 LUBRICATION—Pressure oiler.
 TRANSMISSION—Planetary, 2-speed.
 CLUTCH—Leather faced friction.
 DRIVE—Side chains.
 WHEEL BASE—98 in. Tread 56 in.
 BRAKES—Double acting, rear hubs.

ELMORE MANUFACTURING COMPANY, CLYDE, OHIO.

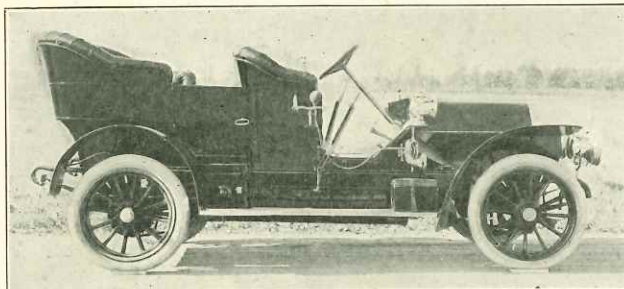
CAR—Elmore
 MODEL—No. 16, touring car
 PRICE—\$1,750
 WEIGHT—2,100 pounds
 SEATING CAPACITY—5
 MOTOR—Three-cylinder two-cycle
 HORSEPOWER—20-24
 VALVES—None
 COOLING—Radiator, pump and fan
 IGNITION—Jump spark-storage battery



CARBURETER—Elmore automatic
 LUBRICATION—Mechanical force feed
 TRANSMISSION—Sliding gear selective
 DRIVE—Shaft, bevel gear
 WHEEL BASE—104 in., Tread, 56 in.
 CLUTCH—Expanding ring
 BRAKES—Three, transmission and hubs
 CONTROL—Spark and throttle

KNOX AUTOMOBILE COMPANY, SPRINGFIELD, MASS.

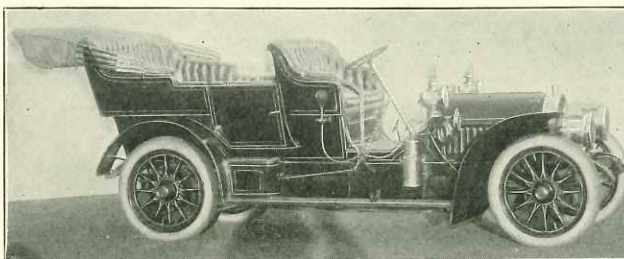
CAR—Knox Waterless
 MODEL—G, touring car
 PRICE—\$4,000
 WEIGHT—2,800 pounds
 SEATING CAPACITY—7
 MOTOR—Four-cylinder vertical
 HORSEPOWER—35-40 at 1,000
 r. p. m.
 VALVES—In heads, opposite
 sides
 COOLING—Direct air
 IGNITION—Jump spark - mag-
 neto-dry cells



CARBURETER—Float feed type
 LUBRICATION—Force feed
 TRANSMISSION—Selective slid-
 ing gear
 DRIVE—Double chain
 WHEEL BASE—112 in., Tread
 56 in.
 CLUTCH—Cone, metal to metal
 BRAKES—Transmission and
 rear hubs
 CONTROL—Throttle and spark

THE LOCOMOBILE CO. OF AMERICA, BRIDGEPORT, CONN.

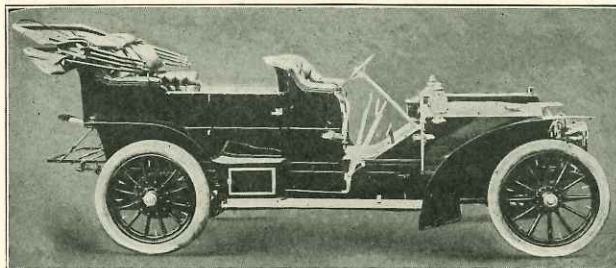
CAR—Locomobile
 MODEL—H, Standard
 PRICE—\$4,500
 WEIGHT—2,900 pounds
 SEATING CAPACITY—7
 MOTOR—Four-cylinder vertical
 HORSEPOWER—35
 VALVES—Opposite-lift operat-
 ed
 COOLING—Radiator, pump and
 fan



IGNITION—Make and break
 CARBURETER—Locomobile
 LUBRICATION—Force feed
 TRANSMISSION—Sliding gear,
 four speeds
 DRIVE—Double chain
 WHEEL BASE—120 in., Tread
 54 in.
 CLUTCH—Special cone
 BRAKES—Three, metal to met-
 al
 CONTROL—Governor

THE LOCOMOBILE CO. OF AMERICA, BRIDGEPORT, CONN.

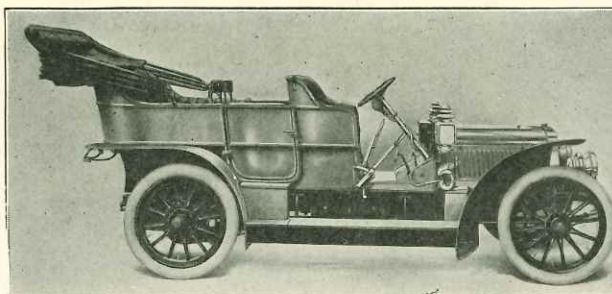
CAR—Locomobile
 MODEL—E, Standard
 PRICE—\$2,800
 WEIGHT—2,000 pounds
 SEATING CAPACITY—5
 MOTOR—Four-cylinder vertical
 HORSEPOWER—20
 VALVES—Opposite sides, me-
 chanical
 COOLING—Radiator, pump and
 fan



IGNITION—Make and break
 magneto
 CARBURETER—Locomobile
 LUBRICATION—Mechanical
 TRANSMISSION—Sliding gear
 DRIVE—Double side chain
 WHEEL BASE—96 in., Tread
 50 in.
 CLUTCH—Special cone
 BRAKES—Three, metal to met-
 al
 CONTROL—Governor

LOZIER MOTOR CAR COMPANY, NEW YORK

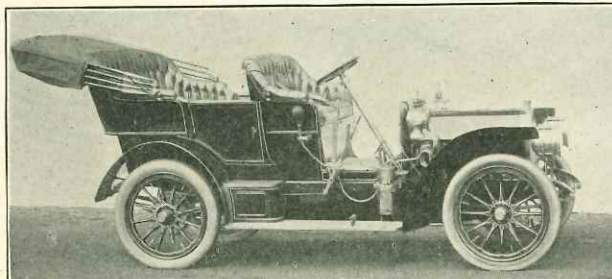
CAR—Lozier
 MODEL—D, touring car
 PRICE—\$5,000
 WEIGHT—2,900 pounds
 SEATING CAPACITY—7
 MOTOR—Four-cylinder vertical
 HORSEPOWER—40
 VALVES—In heads opposite
 sides
 COOLING—Radiator, pump and
 fan
 IGNITION—Jump spark-battery
 magneto



CARBURETER—Automatic
 LUBRICATION—Mechanical-
 splash
 TRANSMISSION—Selective
 sliding gear
 DRIVE—Double side chain
 WHEEL BASE—117 in., Tread
 56 in.
 CLUTCH—Multiple disc
 BRAKES—Four on rear hubs
 CONTROL—Spark, throttle and
 governor

MATHESON MOTOR CAR COMPANY, WILKES BARRE, PA.

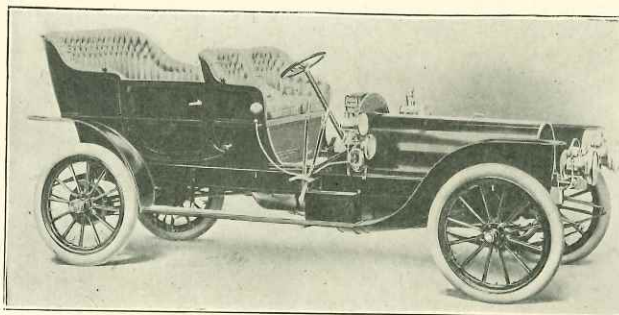
CAR—Matheson
 MODEL—Touring car
 PRICE—\$5,500
 WEIGHT—3,200 pounds
 SEATING CAPACITY—7
 MOTOR—Four-cylinder vertical
 HORSEPOWER—50
 VALVES—In heads, mechanical
 COOLING—Radiator, pump and
 fan
 IGNITION—Make and break
 magneto



CARBURETER—Special auto-
 matic
 LUBRICATION—Force feed
 TRANSMISSION—Selective
 gear
 DRIVE—Double side chain
 WHEEL BASE—129 in., Tread
 56½ in.
 CLUTCH—Multiple disc
 BRAKES—Four, shaft and hub
 CONTROL—Foot and hand
 lever

H. H. FRANKLIN MANUFACTURING CO., SYRACUSE, N. Y.

CAR—Franklin
 MODEL—H, touring car
 PRICE—\$4,000
 WEIGHT—2,400 pounds
 SEATING CAPACITY—7
 MOTOR—Six-cylinder horizontal
 HORSEPOWER—30
 VALVES—Mechanical, with
 auxiliary
 COOLING—Air-fan
 IGNITION—Jump spark dry
 battery



CARBURETER—Float feed au-
 tomatic
 LUBRICATION—Force feed and
 splash
 TRANSMISSION—Sliding ball
 bearing
 DRIVE—Bevel gear
 WHEEL BASE—127 in., Tread,
 54 in.
 CLUTCH—Multiple disc
 BRAKES—Double acting-shaft
 and hubs
 CONTROL—Throttle, spark and
 governor

WOODS MOTOR VEHICLE CO., CHICAGO.

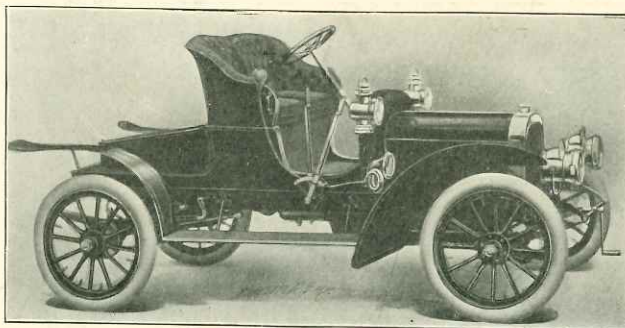
CAR—Woods electric.
 MODEL—Victoria-brougham.
 PRICE—\$2,700
 WEIGHT—2,700 pounds.
 SEATING CAPACITY—Two.
 MOTOR—Four-pole electric.
 CONTROL—Contact levers, four
 speed.
 BEARINGS—Hess - Bright
 throughout.
 BATTERY—40 cells, 9 MV Ex-
 ide, under front hood and
 back seat.



MILEAGE CAPACITY—Over 50
 miles at 18 miles per hour.
 LUBRICATION—Solidified oil.
 TRANSMISSION—By counter
 shaft, with universal joints.
 DRIVE—Side chains, double
 roller.
 WHEEL BASE—73½ in. Tread
 56 in.
 BRAKES—Shaft interlocking,
 rear wheels.

HAYNES AUTOMOBILE CO., KOKOMO, IND.

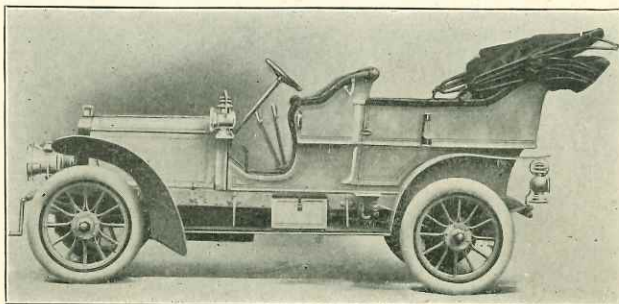
CAR—Haynes
 MODEL—S, runabout
 PRICE—\$2,400
 WEIGHT—2,150 pounds
 SEATING CAPACITY—2
 MOTOR—Four-cylinder vertical
 HORSEPOWER—30
 VALVES—Opposite sides
 COOLING—Radiator; pump and
 fan



IGNITION—Jump spark-storage
 battery
 CARBURETER—Automatic
 type
 LUBRICATION—Force feed oiler
 TRANSMISSION—Sliding gear
 DRIVE—Bevel gear
 WHEEL BASE—103 in., Tread,
 56 in.
 CLUTCH—Haynes band
 BRAKES—Four sets
 CONTROL—Spark and throttle

HAYNES AUTOMOBILE CO., KOKOMO, IND.

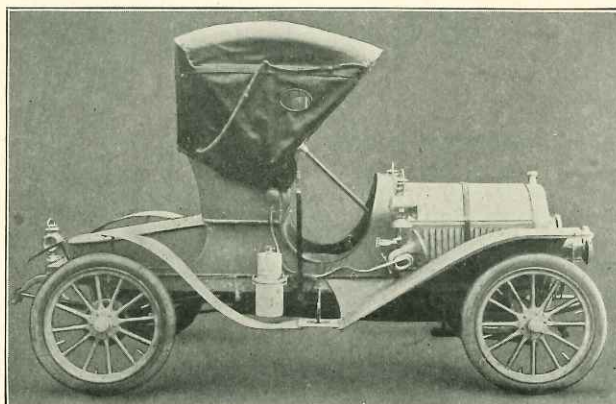
CAR—Haynes
 MODEL—T, touring car
 PRICE—\$3,500
 WEIGHT—2,950 pounds
 SEATING CAPACITY—7
 MOTOR—Four-cylinder vertical
 HORSEPOWER—50
 VALVES—On opposite sides
 COOLING—Radiator, pump and
 fan
 IGNITION—Jump spark-mag-
 neto-battery



CARBURETER—Automatic type
 LUBRICATION—Mechanical
 force feed
 TRANSMISSION—Selective slid-
 ing gear
 DRIVE—Shaft
 WHEEL BASE—108 in., Tread
 56 in.
 CLUTCH—Haynes band
 BRAKES—Four sets
 CONTROL—Spark and throttle

POPE MANUFACTURING CO., HARTFORD, CONN.

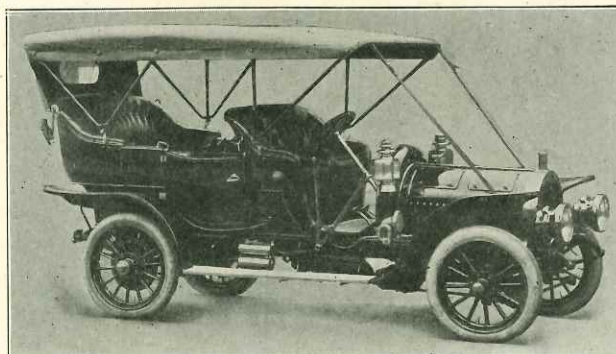
CAR—Pope-Tribune
 MODEL—10, runabout
 PRICE—\$1,750
 WEIGHT—1,600 pounds
 SEATING CAPACITY—2
 MOTOR—Four-cylinder vertical
 HORSEPOWER—16-20
 VALVES—On same side, mechanical
 COOLING—Radiator, pump and fan
 IGNITION—Jump spark - dry and storage battery



CARBURETER—Special Pope design
 LUBRICATION—Force feed oiler
 TRANSMISSION—Sliding gear, three speed
 DRIVE—Shaft, bevel gear
 WHEEL BASE—95 in., Tread 56 in.
 CLUTCH—Inverted cone
 BRAKES—Shaft and rear hubs
 CONTROL—Spark and throttle

ROYAL MOTOR CAR CO., CLEVELAND, O.

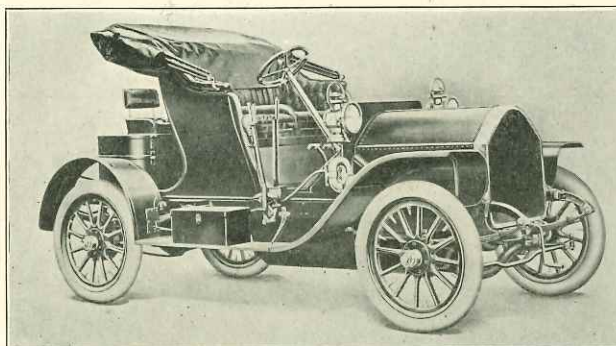
CAR—Royal Tourist
 MODEL—G, Series 2
 PRICE—\$4,000
 WEIGHT—2,650 pounds
 SEATING CAPACITY—8
 MOTOR—Four-cylinder vertical
 HORSEPOWER—45
 VALVES—Opposite sides, mechanical
 COOLING—Radiator, pump and fan
 IGNITION—Jump spark-battery-magneto



CARBURETER—Royal special
 LUBRICATION—Standard oiler
 TRANSMISSION—Special sliding gear, three speeds
 DRIVE—Shaft
 WHEEL BASE—114 in., Tread 56 in.
 CLUTCH—Conical leather faced
 BRAKES—Transmission - rear hubs
 CONTROL—Spark and throttle

KNOX AUTOMOBILE COMPANY, SPRINGFIELD, MASS.

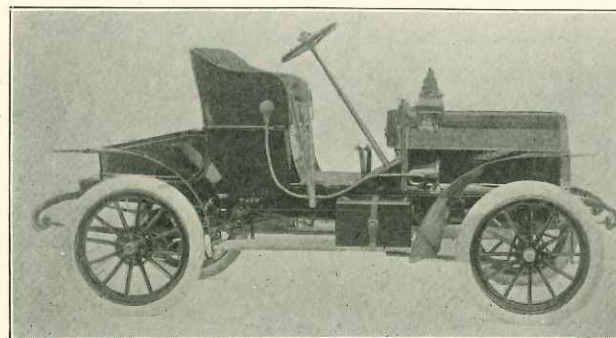
CAR—Knox Waterless
 MOEDL—H, stanhope
 PRICE—\$2,500
 WEIGHT—2,250 pounds
 SEATING CAPACITY—5
 MOTOR—Four-cylinder vertical
 HORSEPOWER—25-30
 VALVES—In heads, mechanical
 COOLING—Direct air
 IGNITION—Jump spark-dry battery



CARBURETER—Float feed
 LUBRICATION—Force feed, mechanical
 TRANSMISSION—Selective sliding gear
 DRIVE—Bevel gear
 WHEEL BASE—102 in., Tread 56 in.
 CLUTCH—Cone, metal to metal
 BRAKES—Four
 CONTROL—Throttle and spark

WALTHAM MANUFACTURING CO., WALTHAM, MASS.

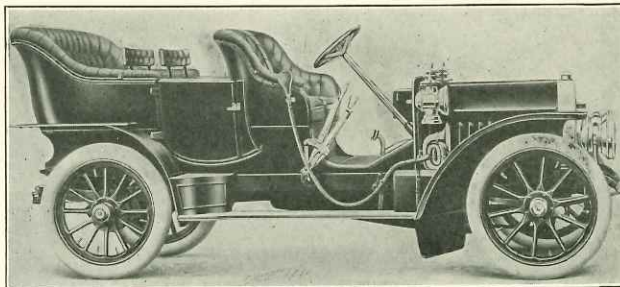
CAR—Waltham Orient
 MODEL—T. R., runabout
 PRICE—\$1,250
 WEIGHT—1,350 pounds
 SEATING CAPACITY—2
 MOTOR—Four-cylinder vertical
 HORSEPOWER—16
 VALVES—Mechanical
 COOLING—Air
 IGNITION—Jump spark-storage, dry battery



CARBURETER—Automatic, air supply
 LUBRICATION—Force feed oiler
 TRANSMISSION—Sliding gear, three speeds
 DRIVE—Shaft
 WHEEL BASE—82 in., Tread 56 in.
 CLUTCH—Cone, leather faced
 BRAKES—Three transmission and rear hubs
 CONTROL—Spark and throttle

PEERLESS MOTOR CAR COMPANY, CLEVELAND, O.

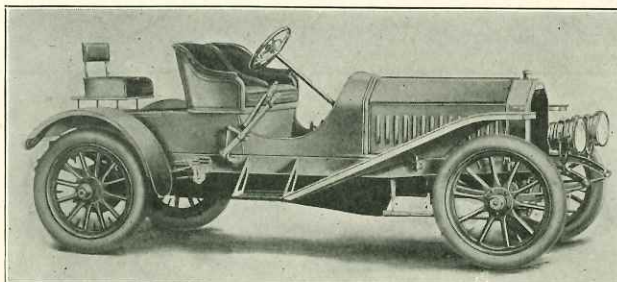
CAR—Peerless
 MODEL—15, touring car
 PRICE—\$5,000
 WEIGHT—3,300 pounds
 SEATING CAPACITY—5
 MOTOR—Four-cylinder vertical
 HORSEPOWER—45
 VALVES—Mechanical
 COOLING—Radiator, pump and fan
 IGNITION—Jump spark-storage battery



CARBURETER—Float feed-governor
 LUBRICATION—Force feed
 TRANSMISSION—Selective sliding gear
 DRIVE—Bevel gear
 WHEEL BASE—114 in., Tread 56 in.
 CLUTCH—Internal expanding
 BRAKES—Four on rear wheels
 CONTROL—Spark and throttle-pedal

PEERLESS MOTOR CAR COMPANY, CLEVELAND, O.

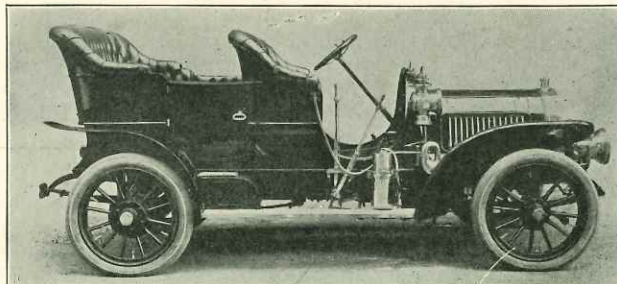
CAR—Peerless
 MODEL—15, roadster
 PRICE—\$5,000
 WEIGHT—2,800 pounds
 SEATING CAPACITY—3
 MOTOR—Four-cylinder vertical
 HORSEPOWER—45
 VALVES—Mechanical
 COOLING—Radiator, pump and fan
 IGNITION—Jump spark-storage battery



CARBURETER—Float feed-governor
 LUBRICATION—Force feed
 TRANSMISSION—Selective sliding gear
 DRIVE—Shaft, bevel gear
 WHEEL BASE—114 in., Tread 56 in.
 CLUTCH—Internal expanding
 BRAKES—Four on rear wheels
 CONTROL—Spark and throttle-pedal

POPE MANUFACTURING CO., HARTFORD, CONN.

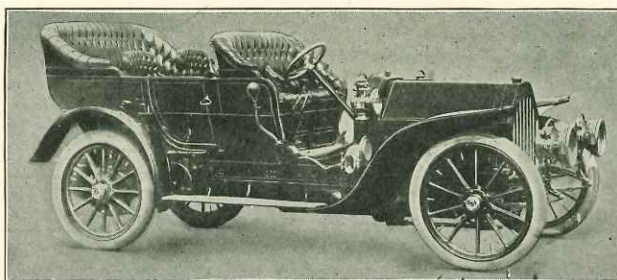
CAR—Pope-Hartford
 MODEL—L, touring car
 PRICE—\$2,750
 WEIGHT—2,350 pounds
 SEATING CAPACITY—5
 MOTOR—Four-cylinder vertical
 HORSEPOWER—25-30
 VALVES—In heads-single cam shaft
 COOLING—Planetic radiator and pump
 IGNITION—Jump spark-storage, dry battery



CARBURETER—Special automatic
 LUBRICATION—Belt-driven oiler
 TRANSMISSION—Sliding gear, three speeds
 DRIVE—Shaft
 WHEEL BASE—102 in., Tread 56 in.
 CLUTCH—Inverted cone
 BRAKES—Three on rear drum-shaft
 CONTROL—Spark and throttle

POPE MOTOR CAR CO., TOLEDO, O.

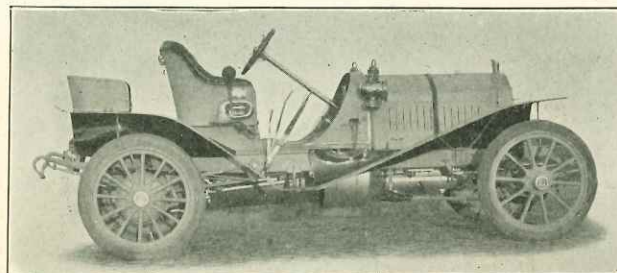
CAR—Pope-Toledo
 MODEL—Type XV., touring car
 PRICE—\$4,250
 WEIGHT—2,850 pounds
 SEATING CAPACITY—7
 MOTOR—Four-cylinder, copper jackets, vertical
 HORSEPOWER—50
 VALVES—In heads, mechanical
 COOLING—Pope-Toledo planetic
 IGNITION—Jump spark-magneto



CARBURETER—Float feed compensating
 LUBRICATION—Mechanical force feed oiler
 TRANSMISSION—Sliding gear, four speed
 DRIVE—Double side chain
 WHEEL BASE—115 in., Tread 54 in.
 CLUTCH—Multiple disc
 Brakes—Three, shaft and rear drum
 CONTROL—Spark and throttle

PACKARD MOTOR CAR CO., DETROIT, MICH.

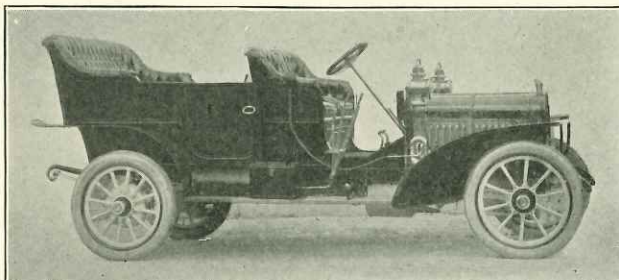
CAR—Packard "30"
 MODEL—Runabout
 PRICE—\$4,200
 WEIGHT—Not given
 SEATING CAPACITY—3
 MOTOR—Four-cylinder vertical
 HORSEPOWER—30
 VALVES—On opposite sides
 COOLING—Radiator, pump and fan
 IGNITION—Jump spark-storage battery-magneto



CARBURETER—Packard
 LUBRICATION—Splash
 TRANSMISSION—Sliding gear, three speeds
 DRIVE—Shaft
 WHEEL BASE—108 in., Tread 56½ in.
 CLUTCH—Packard expanding band
 BRAKES—Four on rear wheels
 CONTROL—Spark and throttle

PACKARD MOTOR CAR CO., DETROIT, MICH.

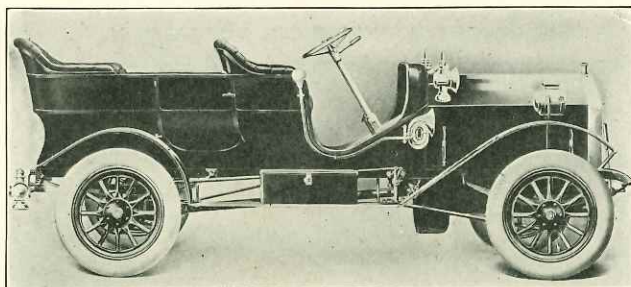
CAR—Packard "30"
 MODEL—Side-entrance phaeton
 PRICE—\$4,200
 WEIGHT—2,850 pounds
 SEATING CAPACITY—5
 MOTOR—Four-cylinder vertical
 HORSEPOWER—30 at 650 r. p. m.
 VALVES—Opposite sides, mechanical
 COOLING—Radiator, pump and fan



IGNITION—Jump spark-magneto-storage battery
 CARBURETER—Packard
 LUBRICATOR—Splash
 TRANSMISSION—Sliding gear, three speeds
 DRIVE—Shaft
 WHEEL BASE—122 in., Tread 56½ in.
 CLUTCH—Expanding band
 BRAKES—Four on rear wheels
 CONTROL—Spark and throttle

NORTHERN MOTOR CAR CO., DETROIT, MICH.

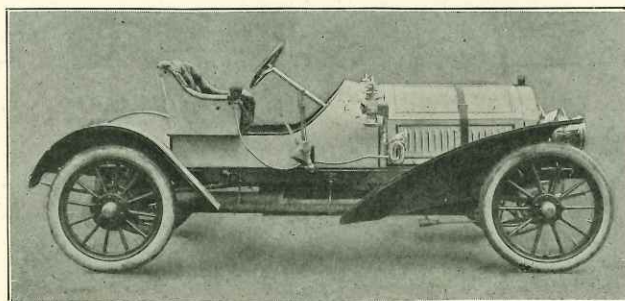
CAR—Northern
 MODEL—L, touring car
 PRICE—\$3,500
 WEIGHT—3,000 pounds
 SEATING CAPACITY—7
 MOTOR—Four-cylinder vertical
 HORSEPOWER—50
 VALVES—In heads—mechanical
 COOLING—Radiator, pump and fan
 IGNITION—Jump spark-storage battery



CARBURETER—Northern compensating
 LUBRICATION—Float feed-splash
 TRANSMISSION—Sliding gear
 DRIVE—Shaft
 WHEEL BASE—119 in., Tread 56 in.
 CLUTCH—Air, self-adjusting
 BRAKES—Four on hubs—two foot
 CONTROL—Spark and throttle

E. R. THOMAS MOTOR CAR CO., BUFFALO, N. Y.

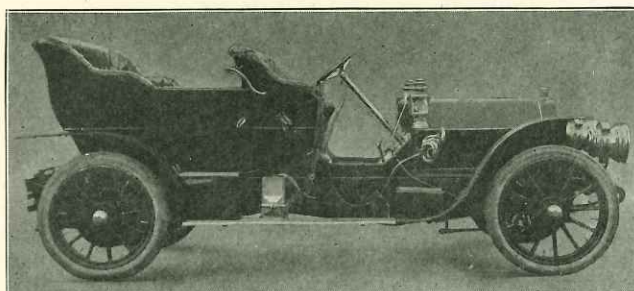
CAR—Thomas Forty
 MODEL—C, runabout
 PRICE—\$2,750
 WEIGHT—2,450 pounds
 SEATING CAPACITY—2
 MOTOR—Four-cylinder vertical
 HORSEPOWER—35-40
 VALVES—On same side, mechanical
 COOLING—Radiator, pump and fan
 IGNITION—Jump spark-storage-dry battery



CARBURETER—Automatic
 LUBRICATION—Force feed-splash
 TRANSMISSION—Sliding gear, selective, three speed
 DRIVE—Bevel gear
 WHEEL BASE—112 in., Tread 55 in.
 CLUTCH—Cone, leather faced, 16-in. diameter
 BRAKES—Transmission - rear hubs
 CONTROL—Spark and throttle

THE F. B. STEARNS CO., CLEVELAND, O.

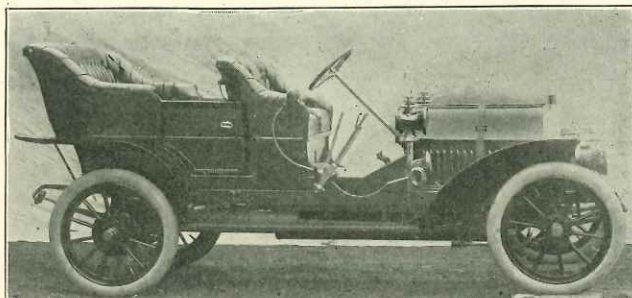
CAR—Stearns
 MODEL—Touring car
 PRICE—\$4,500
 WEIGHT—2,000 pounds
 SEATING CAPACITY—7
 MOTOR—Four-cylinder vertical
 HORSEPOWER—30
 VALVES—On same side, mechanical
 COOLING—Radiator, pump and fan
 IGNITION—Jump spark - dry battery-magneto



CARBURETER—Stearns multiple jet
 LUBRICATION—Force feed, sliding gear
 DRIVE—Double chain
 WHEEL BASE—120 in., Tread 56½ in.
 CLUTCH—Internal expanding
 BRAKES—Band on shaft, internal in wheels
 CONTROL—Spark and throttle, foot lever

E. R. THOMAS DETROIT CO., DETROIT, MICH.

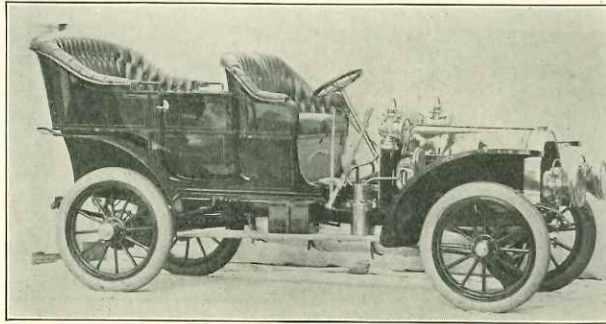
CAR—Thomas Forty
 MODEL—C, touring car
 PRICE—\$2,750
 WEIGHT—2,600 pounds
 SEATING CAPACITY—5
 MOTOR—Four-cylinder vertical
 HORSEPOWER—35-40
 VALVES—On same side, mechanical
 COOLING—Radiator, pump and fan
 IGNITION—Jump spark-storage-dry battery



CARBURETER—Automatic
 LUBRICATION—Force feed and splash
 TRANSMISSION—Sliding gear
 DRIVE—Bevel gear
 WHEEL BASE—112 in., Tread 55 in.
 CLUTCH—Cone, leather faced
 BRAKES—Transmission - rear hubs
 CONTROL—Spark and throttle on wheels

STUDEBAKER AUTOMOBILE CO., SOUTH BEND, IND.

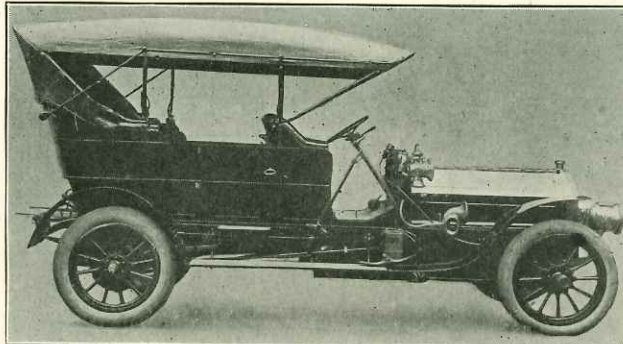
CAR—Studebaker
 MODEL—L, gasoline touring car
 PRICE—\$3,000
 WEIGHT—2,500 pounds
 SEATING CAPACITY—5
 MOTOR—Four-cylinder vertical
 HORSEPOWER—28-32
 VALVES—One side, mechanical
 COOLING—Radiator, pump and fan



IGNITION—Jump spark-storage battery
 CARBURETER—Automatic
 LUBRICATION—Mechanical force feed
 TRANSMISSION—Sliding train
 DRIVE—Shaft
 WHEEL BASE—104 in., Tread 54 in.
 CLUTCH—Friction cone
 BRAKES—Two sets on rear wheels
 CONTROL—Spark and throttle

THE GEORGE N. PIERCE CO., BUFFALO, N. Y.

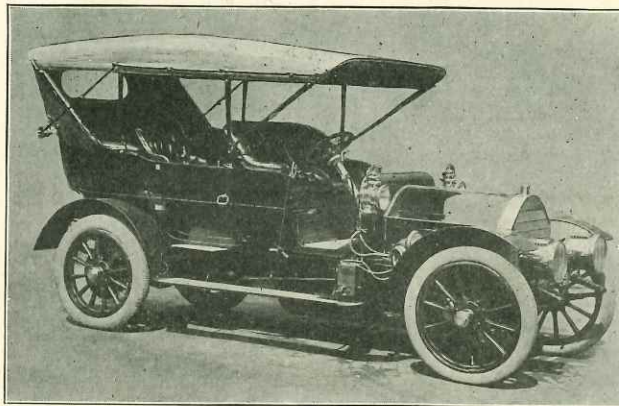
CAR—Pierce Great Arrow
 MODEL—Touring car
 PRICE—\$6,500, without top
 WEIGHT—Not given
 SEATING CAPACITY—7
 MOTOR—Six-cylinder vertical
 HORSEPOWER—65 at 1,400 r. p. m.
 VALVES—Opposite sides
 COOLING—Radiator, pump and fan



IGNITION—Jump spark-storage battery-magneto
 CARBURETER—Automatic
 LUBRICATION—Automatic
 TRANSMISSION—Selective gear, three speeds
 DRIVE—Bevel gear
 WHEEL BASE—135 in., Tread 56 in.
 CLUTCH—Cone, leather faced
 BRAKES—Four on rear hubs
 CONTROL—Hand throttle

THE GEORGE N. PIERCE CO., BUFFALO, N. Y.

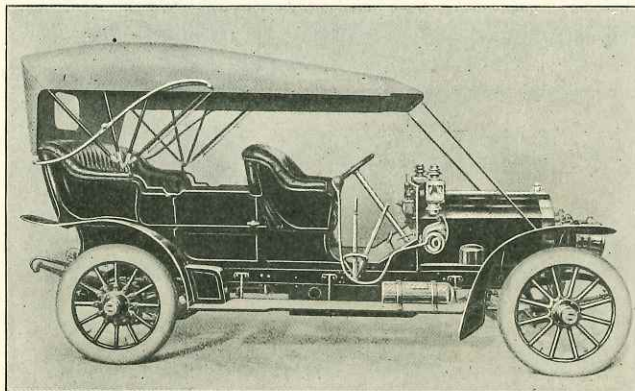
CAR—Pierce Great Arrow
 MODEL—Touring car
 PRICE—\$5,000
 WEIGHT—3,800 pounds
 SEATING CAPACITY—7
 MOTOR—Four-cylinder vertical
 HORSEPOWER—40-45
 VALVES—Opposite sides
 COOLING—Radiator, pump and fan
 IGNITION—Jump spark storage battery-magneto



CARBURETER—Automatic
 LUBRICATION—Automatic
 TRANSMISSION—Sliding gear, three speeds
 DRIVE—Bevel gear
 WHEEL BASE—124 in., Tread 56 in.
 CLUTCH—Cone, leather faced
 BRAKES—Four on rear drums
 CONTROL—Hand throttle

AMERICAN LOCOMOTIVE AUTOMOBILE CO., NEW YORK.

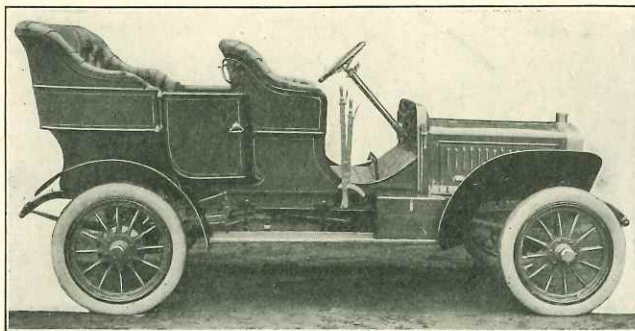
CAR—Berliet.
 MODEL—Limousine.
 PRICE—\$7,500.
 WEIGHT—3,200 pounds.
 SEATING CAPACITY—Seven.
 MOTOR—Four-cylinder vertical.
 CONTROL—Spark and throttle.
 HORSEPOWER—40-50.
 VALVES—Opposite, mechanical.
 COOLING—Radiator and pump.



IGNITION—Make and break.
 CARBURETER—Berliet.
 LUBRICATION—Force "Berliet."
 TRANSMISSION—Selective gear, four speed.
 CLUTCH—Disc.
 DRIVE—Side chains.
 WHEEL BASE—118 in. or 126 in. Tread 56 in.
 BRAKES—Full set.

MITCHELL MOTOR CAR CO., RACINE, WIS.

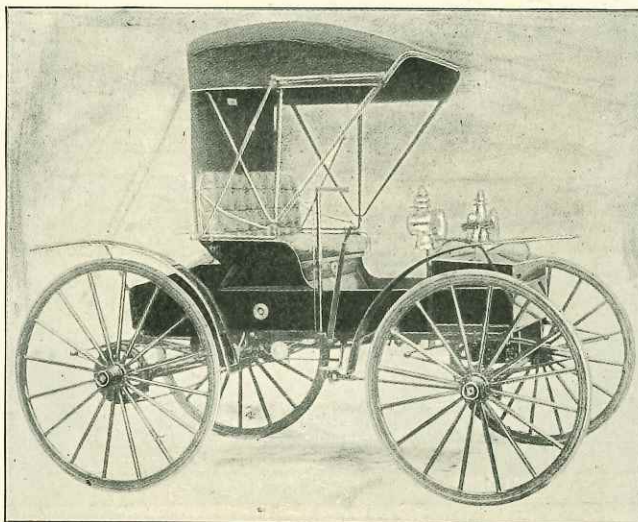
CAR—Mitchell.
 MODEL—F, touring car.
 PRICE—\$2,000.
 WEIGHT—2,300 pounds.
 SEATING CAPACITY—Five.
 MOTOR—Four-cylinder vertical.
 CONTROL—Spark, throttle by foot or hand.
 HORSEPOWER—35 at 1,200 r. p. m.
 VALVES—In head and side, mechanical.
 COOLING—Radiator, pump and fan.



IGNITION—Jump spark.
 CARBURETER—Float feed, compensating.
 LUBRICATION—Mechanical.
 TRANSMISSION—Progressive sliding gear, three speed.
 CLUTCH—Cone type.
 DRIVE—Bevel gear-shaft.
 WHEEL BASE—108 in. Tread 56 in.
 BRAKES—Internal, external, rear wheels.

THE RELIABLE DAYTON MOTOR CAR CO., CHICAGO.

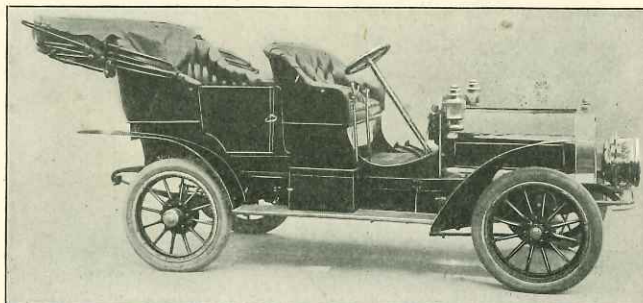
CAR—Reliable Dayton.
 MODEL—C, runabout.
 PRICE—\$600.
 WEIGHT—1,050 pounds.
 SEATING CAPACITY—Two.
 MOTOR—Two-cylinder horizontal.
 CONTROL—Spark and throttle.
 HORSEPOWER—15 at 1,000 r. p. m.
 VALVES—Mechanical.
 COOLING—Pump and radiator.



IGNITION—Jump spark, double coil.
 CARBURETER—Schebler.
 LUBRICATION—Pressure oiler.
 TRANSMISSION—Planetary, 2-speed.
 CLUTCH—Leather faced friction.
 DRIVE—Side chain.
 WHEEL BASE—84 in. Tread 56 in.
 BRAKES—Double acting, rear hubs.

THE KISSEL MOTOR CAR CO., HARTFORD, WIS.

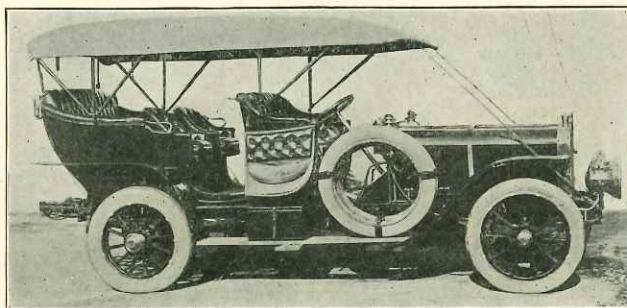
CAR—Kisselkar.
 MODEL—A, touring car.
 PRICE—\$1,850.
 WEIGHT—2,150 pounds.
 SEATING CAPACITY—Five.
 MOTOR—Four-cylinder vertical.
 CONTROL—Spark and throttle.
 HORSEPOWER—30 at 750 r. p. m.
 VALVES—Same side, mechanical.
 COOLING—Radiator and pump.



IGNITION—Jump spark.
 CARBURETER—Schebler.
 LUBRICATION—Mechanical, six leads.
 TRANSMISSION—Selective sliding gear, three speed.
 CLUTCH—Cone type.
 DRIVE—Shaft.
 WHEEL BASE—96 in. Tread 56 in.
 BRAKES—Internal, external, rear hubs.

STEVENS-DURYEA CO., CHICOPEE FALLS, MASS.

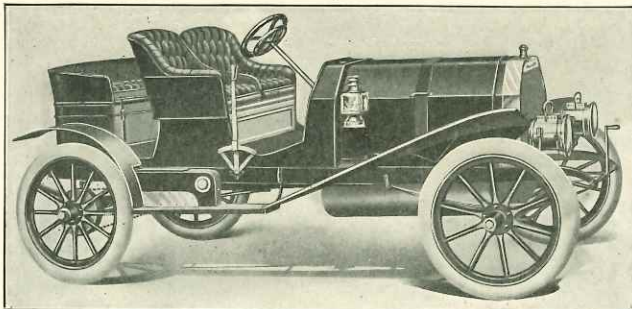
CAR—Stevens-Duryea
 MODEL—S, touring car
 PRICE—\$6,000
 WEIGHT—3,500 pounds
 SEATING CAPACITY—7
 MOTOR—Six-cylinder vertical
 HORSEPOWER—50 at 1,000 r. p. m.
 VALVES—On same side, mechanical
 COOLING—Radiator, pump and fan
 IGNITION—Jump spark-dry storage battery



CARBURETER—Automatic
 LUBRICATION—Mechanical force feed
 TRANSMISSION—Sliding progressive
 DRIVE—Bevel gear
 WHEEL BASE—122 in., Tread 56 in.
 CLUTCH—Multiple disc
 BRAKES—External and internal on rear hubs
 CONTROL—Spark and throttle

EVANSVILLE AUTOMOBILE CO., EVANSVILLE, IND.

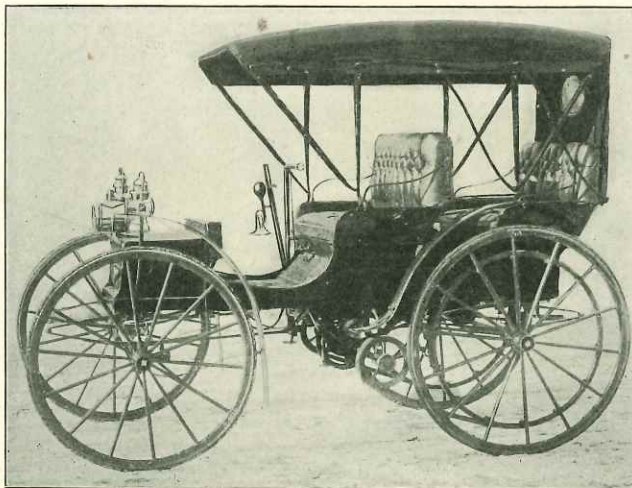
CAR—Simplicity.
 MODEL—Roadster.
 PRICE—\$2,500.
 WEIGHT—1,900 pounds.
 SEATING CAPACITY—Three.
 MOTOR—Four-cylinder vertical.
 CONTROL—Side lever.
 HORSEPOWER—35-40 at 1,000 r. p. m.
 VALVES—Mechanical.
 COOLING—Radiator, pump and fan.



IGNITION—Jump spark.
 CARBURETER—Schebler.
 LUBRICATION—McCord lubricator.
 TRANSMISSION—Friction, roller traction.
 CLUTCH—By engaging friction.
 DRIVE—Side chains.
 WHEEL BASE—105 in. Tread 56 in.
 BRAKES—Rear hubs, transmission.

HOLSMAN AUTOMOBILE COMPANY, CHICAGO.

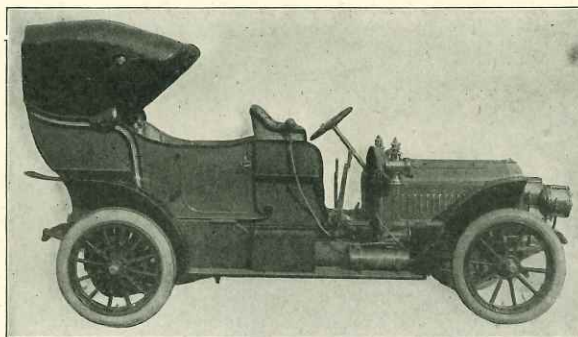
CAR—Holsman touring.
 MODEL—11, convertible.
 PRICE—\$800.
 WEIGHT—900 pounds.
 SEATING CAPACITY—Two or four.
 MOTOR—Two-cylinder horizontal.
 CONTROL—Throttle lever.
 HORSEPOWER—10 at 1,200 r. p. m.
 VALVES—Inlet automatic, exhaust mechanical.



COOLING—Air.
 IGNITION—Jump spark, dry battery.
 CARBURETER—Float feed, auxiliary.
 LUBRICATION—Automatic force feed.
 TRANSMISSION—Cable, two speeds.
 CLUTCH—Cable tension.
 DRIVE—Cable.
 WHEEL BASE—76 in. Tread 56 to 63 in.
 BRAKES—Two, on rear wheels.

WOODS MOTOR VEHICLE CO., CHICAGO.

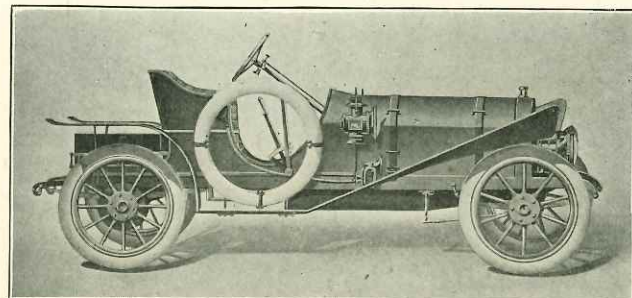
CAR—Woods gasoline.
 MODEL—1907 touring car.
 PRICE—\$4,500 complete.
 WEIGHT—3,200 pounds.
 SEATING CAPACITY—Seven.
 MOTOR—Four-cylinder vertical.
 CONTROL—Spark and throttle.
 HORSEPOWER—40-45.
 VALVES—Same side, mechanical.
 COOLING—Radiator, pump and fan.



IGNITION—Bosch magneto, storage battery.
 CARBURETER—Float feed.
 LUBRICATION—Force feed.
 TRANSMISSION—Three speed.
 CLUTCH—Adjustable cone.
 DRIVE—Side chains.
 WHEEL BASE—120 in. Tread 56 in.
 BRAKES—Counter shaft, rear wheels.

OLDS MOTOR WORKS, LANSING, MICH.

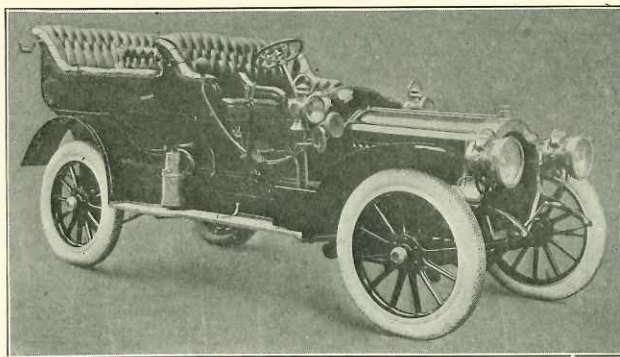
CAR—Oldsmobile
 MODEL—H, touring runabout
 PRICE—\$2,700
 WEIGHT—2,200 pounds
 SEATING CAPACITY—2 and rumble
 MOTOR—Four-cylinder vertical
 HORSEPOWER—35-40
 VALVES—Left side
 COOLING—Radiator, pump and fan
 IGNITION—Jump spark-storage, dry battery



CARBURETER—Kingston
 LUBRICATION—Splash, oil pump
 TRANSMISSION—Sliding gear, three speeds
 DRIVE—Shaft
 WHEEL BASE—106½ in., Tread 55 in.
 CLUTCH—Reversible, leather faced
 BRAKES—Internal and external
 CONTROL—Spark and throttle

E. R. THOMAS MOTOR CAR CO., BUFFALO, N. Y.

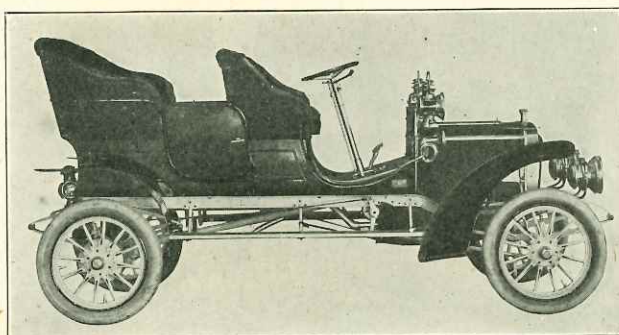
CAR—Thomas Sixty
 MODEL—36, touring car
 PRICE—\$4,000
 WEIGHT—3,200 pounds
 SEATING CAPACITY—7
 MOTOR—Four-cylinder vertical
 CONTROL—Spark and throttle
 HORSEPOWER—60 at 1,300 r.
 p. m.
 VALVES—Opposite sides, me-
 chanical
 COOLING—Radiator, pump and
 fan



IGNITION—Double jump spark-
 battery-magneto
 CARBURETER — Automatic
 water jacketed
 LUBRICATION—Sight feed me-
 chanical-splash
 TRANSMISSION—Selective slid-
 ing gear, four speed
 CLUTCH—Three disc metallic
 DRIVE—Double side chain
 WHEEL BASE—118 in., Tread
 56½ in.
 BRAKES—Four, shaft and rear
 hubs

NORTHERN MOTOR CAR CO., DETROIT, MICH.

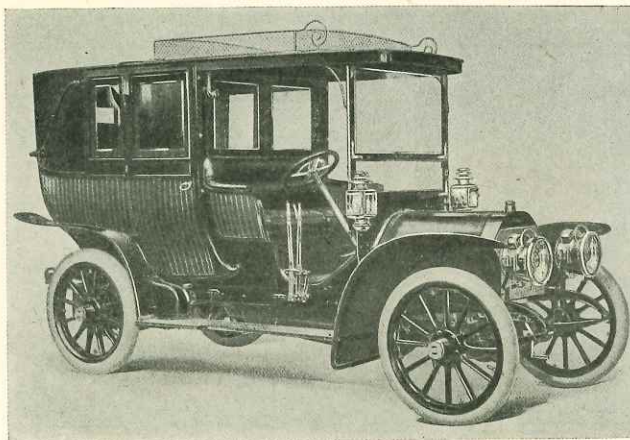
CAR—Northern
 MODEL—C, touring car
 PRICE—\$1,800
 WEIGHT—2,000 pounds
 SEATING CAPACITY—5
 MOTOR — Two-cylinder hori-
 zontal
 HORSEPOWER—20
 VALVES—Opposite sides, me-
 chanical
 COOLING—Radiator, pump and
 fan



IGNITION — Jump spark-dry
 battery
 CARBURETER—Northern com-
 pensating
 LUBRICATION—Force feed
 TRANSMISSION—Planetary
 DRIVE—Shaft
 WHEEL BASE—106 in., Tread
 56 in.
 CLUTCH — Expanding metal
 ring
 BRAKES—Four on hubs
 CONTROL—Spark and throttle

AMERICAN LOCOMOTIVE AUTOMOBILE CO., NEW YORK.

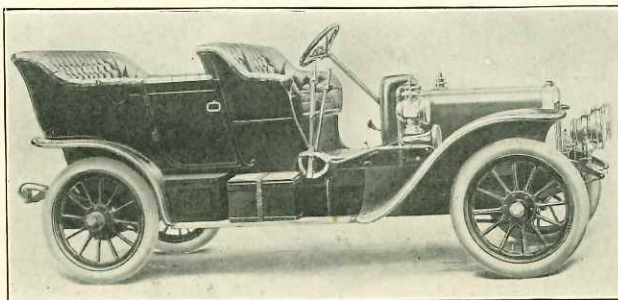
CAR—Berliet
 MODEL—Touring car.
 PRICE—\$5,500.
 WEIGHT—2,700 pounds.
 SEATING CAPACITY—Five.
 MOTOR—Four-cylinder vertical.
 CONTROL—Spark and throttle.
 HORSEPOWER—24-30.
 VALVES—Opposite, mechanical.
 COOLING—Radiator and pump.



IGNITION—Make and break.
 CARBURETER—Berliet.
 LUBRICATION—Force "Ber-
 liet."
 TRANSMISSION—Selected gear,
 four speed.
 CLUTCH—Disc.
 DRIVE—Side chains.
 WHEEL BASE—112 in. Tread
 56 in.
 BRAKES—Full set.

THE WINTON MOTOR CARRIAGE CO., CLEVELAND, O.

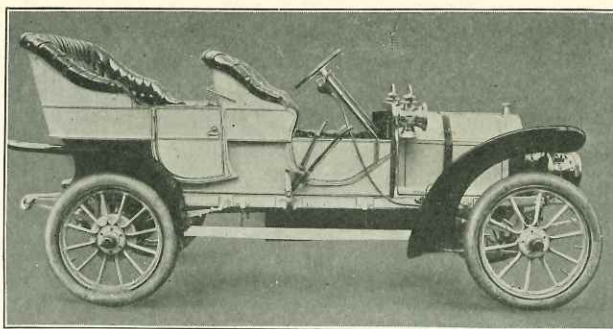
CAR—Winton
 MODEL—Type X-I-V, touring
 car
 PRICE—\$2,500
 WEIGHT—Not given
 SEATING CAPACITY—5
 MOTOR—Four-cylinder vertical
 CONTROL—Hand and foot,
 Winton air governor
 HORSEPOWER—30 at 1,000 r.
 p. m.
 VALVES—Automatic and me-
 chanical



COOLING—Radiator, pump and
 fan
 IGNITION — Jump spark-dry-
 storage battery
 CARBURETER—Automatic
 LUBRICATION — "Shooting"
 oiler
 TRANSMISSION — Individual
 clutch, two speed
 CLUTCH—Individual cone
 DRIVE—Bevel gear
 WHEEL BASE—104 in., Tread
 56½ in.
 BRAKES—Four on rear hubs

OLDS MOTOR WORKS, LANSING, MICH.

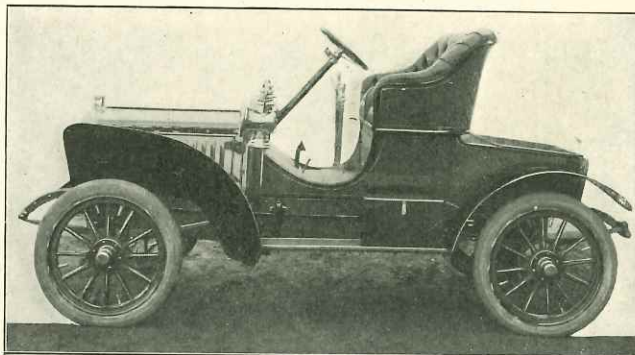
CAR—Oldsmobile
 MODEL—A, touring car
 PRICE—\$2,750
 WEIGHT—2,400 pounds
 SEATING CAPACITY—5
 MOTOR—Four-cylinder vertical
 HORSEPOWER—35-40
 VALVES—On left side
 COOLING—Radiator, pump and fan
 IGNITION—Jump spark-storage, dry battery



CARBURETER—Kingston
 LUBRICATION—Splash-oil pump
 TRANSMISSION—Sliding gear, three speeds
 DRIVE—Shaft
 WHEEL BASE—106½ in., Tread 55 in.
 CLUTCH—Reversed cone, leather faced
 BRAKES—Internal and external
 CONTROL—Spark and throttle

MITCHELL MOTOR CAR CO., RACINE, WIS.

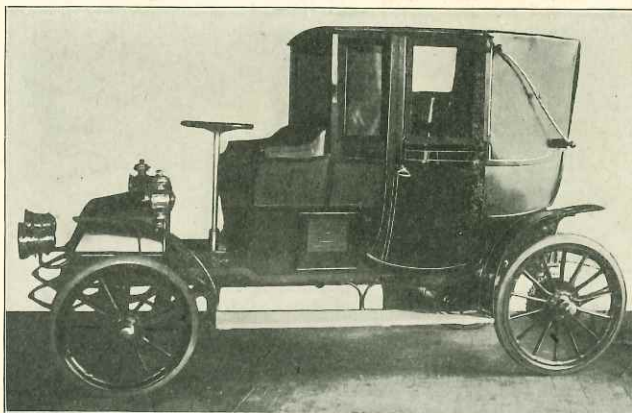
CAR—Mitchell.
 MODEL—E, runabout.
 PRICE—\$1,000.
 WEIGHT—1,600 pounds.
 SEATING CAPACITY—Two.
 MOTOR—Four-cylinder vertical.
 CONTROL—Spark and throttle.
 HORSEPOWER—20 at 1,200 r. p. m.
 VALVES—In head and side mechanical.
 COOLING—Radiator, pump and fan.



IGNITION—Jump spark.
 CARBURETER—Float feed-compensating.
 LUBRICATION—Mechanical.
 TRANSMISSION—Progressive sliding gear.
 CLUTCH—Cone type.
 DRIVE—Bevel gear, shaft.
 WHEEL BASE—90 in. Tread 56 in.
 BRAKES—All on rear wheels.

WOOD MOTOR VEHICLE CO., CHICAGO.

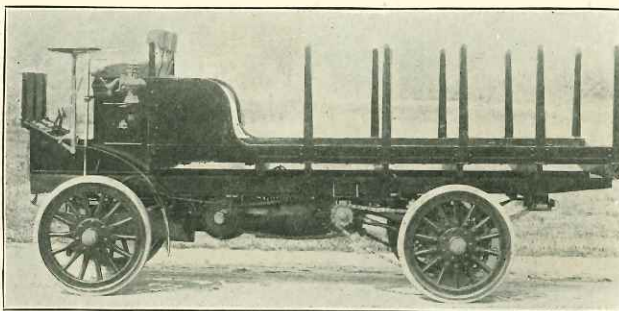
CAR—Woods electric.
 MODEL—Landaulette.
 PRICE—\$4,000.
 WEIGHT—3,500 pounds.
 SEATING CAPACITY—Four.
 MOTOR—Four-pole electric.
 CONTROL—Contact levers, four speed.
 BEARINGS—Hess - Bright throughout.
 BATTERY—40 cells, 11 MV Exide, under front and rear seats.



MILEAGE CAPACITY—Over 50 miles at 17 miles per hour.
 LUBRICATION—Solidified oil.
 TRANSMISSION—By counter shaft, with universal joints.
 DRIVE—Side chains, double roller.
 WHEEL BASE—106 in. Tread 56 in.
 BRAKES—Shaft interlocking, rear wheels.

KNOX AUTOMOBILE COMPANY, SPRINGFIELD, MASS.

CAR—Knox Waterless
 MODEL—102, truck
 Price, \$3,700
 WEIGHT—5,000 pounds
 CARRYING CAPACITY—6,000 pounds
 MOTOR—Two-cylinder horizontal
 HORSEPOWER—16-20 at 900 r. p. m.
 VALVES—In heads, opposite sides
 COOLING—Direct air-fan



IGNITION—Jump spark-dry battery
 CARBURETER—Float feed
 LUBRICATION—McCord oiler
 TRANSMISSION—Planetary
 DRIVE—Double side chain
 WHEEL BASE—111 in., Tread 62 in.
 CLUTCH—Multiple disc
 BRAKES—Three transmission and hubs
 CONTROL—Spark and throttle

THE ADAMS COMPANY, DUBUQUE, IA.

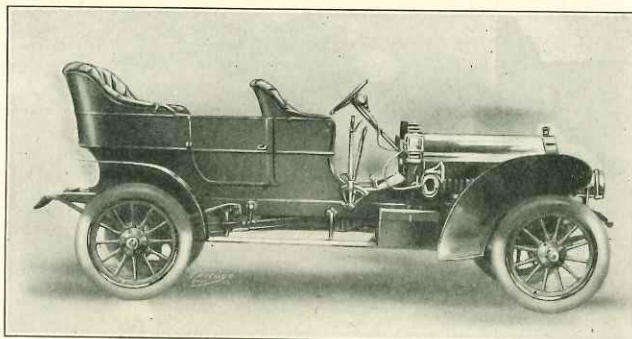
CAR—Adams-Farwell
 MODEL—7-A, touring car
 PRICE—\$3,250
 WEIGHT—2,600 pounds
 SEATING CAPACITY—7
 MOTOR—Five-cylinder horizontal
 CONTROL—Variable compression
 HORSEPOWER—40-45 at 800 r. p. m.
 VALVES—In heads, mechanical



COOLING—Air-revolving cylinders
 IGNITION—Jump spark
 CARBURETER—Special
 LUBRICATION—Force feed
 TRANSMISSION—Selective gear
 CLUTCH—Internal expanding
 DRIVE—Single chain
 WHEEL BASE—120 in., Tread 56 in.
 BRAKES—Rear hubs-transmission

THE BARTHOLOMEW CO., PEORIA, ILL.

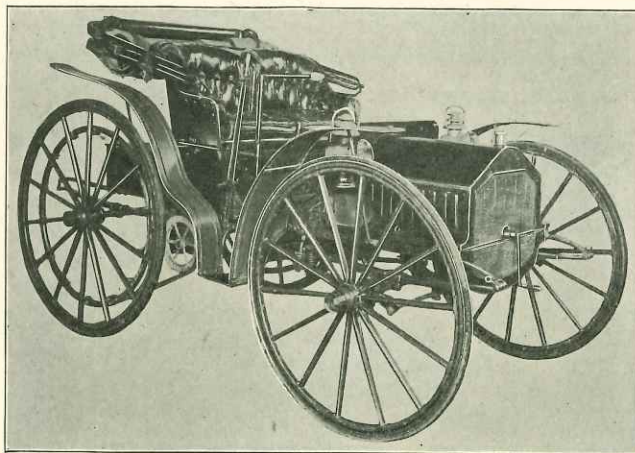
CAR—Glide
 MODEL—E, limousine
 PRICE—\$3,500
 WEIGHT—2,800 pounds
 SEATING CAPACITY—4 or 5
 MOTOR—Four-cylinder vertical
 CONTROL—Spark and throttle
 HORSEPOWER—36 at 1,000 r. p. m.
 VALVES—Mechanical
 COOLING—Radiator, pump and fan



IGNITION—Jump spark
 CARBURETER—Schebler
 LUBRICATION—Positive pump feed
 TRANSMISSION—Twin gear, two speed
 CLUTCH—Multiple disc
 DRIVE—Shaft-bevel gear
 WHEEL BASE—103 in. Tread, 56 in.
 BRAKES—Internal expanding

CHICAGO COACH & CARRIAGE CO., CHICAGO.

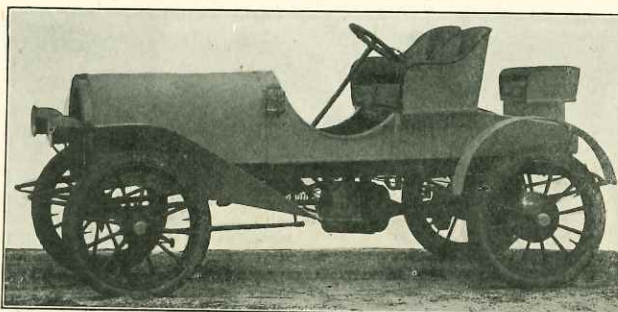
CAR—Duer
 MODEL—Buggy type runabout
 PRICE—\$750
 WEIGHT—875 pounds
 SEATING CAPACITY—2
 MOTOR—Two-cylinder opposed
 CONTROL—Single lever
 STEERING—By side lever
 HORSEPOWER—12
 VALVES—Intake automatic, exhaust-mechanical



COOLING—Air-combination fan
 IGNITION—Jump spark
 CARBURETER—Holley
 LUBRICATION—Force feed
 TRANSMISSION—Selective type, two speed
 CLUTCH—Cable tension
 DRIVE—Steel cable
 WHEEL BASE—80 in. Tread, 56 in.
 BRAKES—Each rear wheel

BAKER MOTOR VEHICLE CO., CLEVELAND, O.

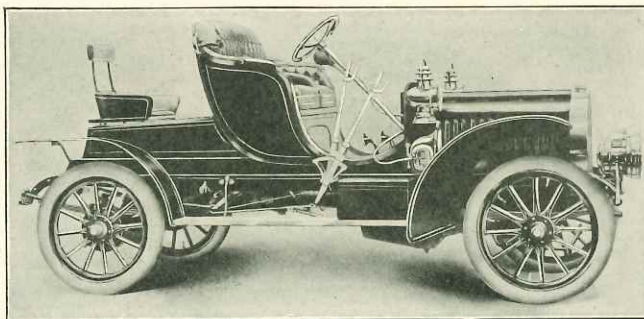
CAR—Baker electric
 MODEL—M, roadster
 PRICE—\$2,250
 WEIGHT—2,200 pounds
 SEATING CAPACITY—3
 MOTOR—Electric-series wound
 CONTROL—Continuous torque system
 HORSEPOWER—Rated $3\frac{1}{2}$
 BATTERIES—32 cells-11 PV



MILEAGE—60 miles at 14 miles per hour
 BEARINGS—Ball throughout
 TRANSMISSION—Planetary gear reduction
 DRIVE—Shaft-bevel gear
 STEERING GEAR—Wheel
 WHEEL BASE—95 in. Tread, 56 in.
 BRAKES—Transmission - rear axles

THE C. H. BLOMSTROM MOTOR CO., DETROIT, MICH.

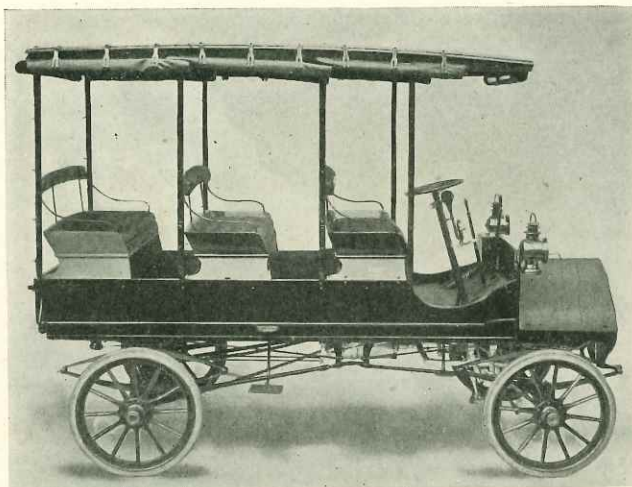
CAR—Queen
 MODEL—J, runabout
 PRICE—\$2,100
 WEIGHT—2,000 pounds
 SEATING CAPACITY—3
 MOTOR—Four-cylinder vertical
 CONTROL—Throttle
 HORSEPOWER—30 at 1,200 r.
 p. m.
 VALVES—Mechanical



COOLING—Radiator, pump and fan
 IGNITION—Jump spark
 CARBURETER—Float feed
 LUBRICATION—Mechanical
 TRANSMISSION—Sliding gear, four speed
 CLUTCH—Multiple disc
 DRIVE—Shaft
 WHEEL BASE—102 in. Tread, 56 in.
 BRAKES—Internal, external

LOGAN CONSTRUCTION CO., CHILLICOTHE, O.

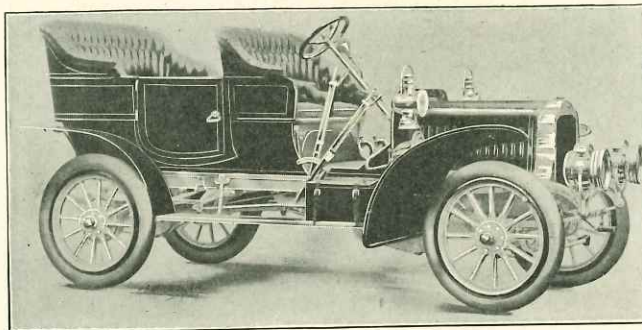
CAR—Logan
 MODEL—N, light delivery
 PRICE—\$1,000
 WEIGHT—1,500 pounds
 CARRYING CAPACITY—1,200 pounds or six passengers
 MOTOR—Two-cylinder horizontal
 CONTROL—Spark and throttle
 HORSEPOWER—10 at 1,275 r.
 p. m.
 VALVES—Vertical-mechanical
 COOLING—Air



IGNITION—Jump spark-storage battery
 CARBURETER—Float feed type
 LUBRICATION—Mechanical force feed
 TRANSMISSION—Sliding gear, progressive
 CLUTCH—Contracting band
 DRIVE—Single chain
 WHEEL BASE—90 in. Tread, 56½ in.
 BRAKES—Two band contracting

THE C. H. BLOMSTROM MOTOR CO., DETROIT, MICH.

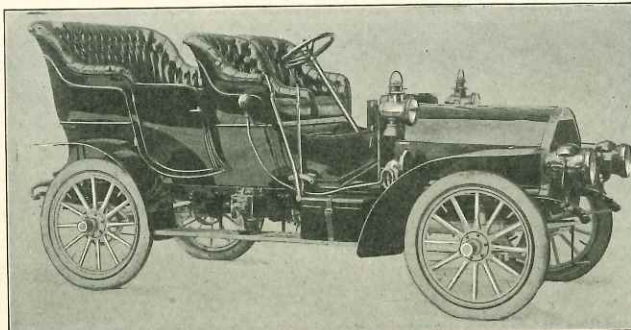
CAR—Queen
 MODEL—28, touring car
 PRICE—\$2,350
 WEIGHT—2,000 pounds
 SEATING CAPACITY—5
 MOTOR—Four-cylinder
 CONTROL—Lever on wheel
 HORSEPOWER—26-28
 VALVES—Same side, mechanical
 COOLING—Radiator, pump and fan



IGNITION—Storage battery-high tension
 CARBURETER—Holley
 LUBRICATION—Automatic force feed
 TRANSMISSION—Progressive, three speed
 CLUTCH—Cone
 DRIVE—Shaft
 WHEEL BASE—102 in. Tread, 56 in.
 BRAKES—Expanding and contracting

WALTHAM MANUFACTURING CO., WALTHAM, MASS.

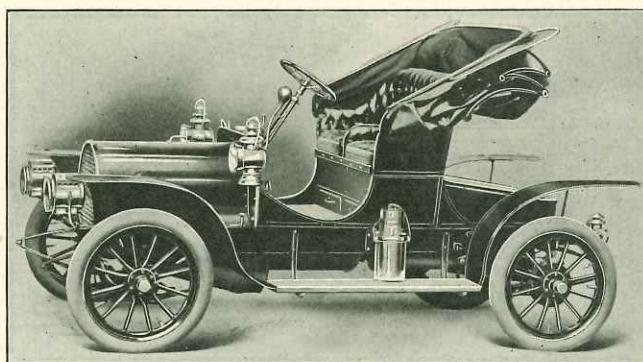
CAR—Waltham-Orient
 MODEL—D. L., touring car
 PRICE—\$2,000
 WEIGHT—1,850 pounds
 SEATING CAPACITY—5
 MOTOR—Four-cylinder vertical
 CONTROL—Spark and throttle-governor.
 HORSEPOWER—20 at 1,000 r.
 p. m.
 VALVES—One side-in head-mechanical
 COOLING—Air



IGNITION—Jump spark-storage-dry battery
 CARBURETER—Orient automatic
 LUBRICATION—Splash-Hill oiler
 TRANSMISSION—Non-selective sliding gear, three speed
 CLUTCH—Leather faced cone
 DRIVE—Bevel gear
 WHEEL BASE—96 in. Tread, 56 in.
 BRAKES—Transmission-rear hubs

H. H. FRANKLIN MANUFACTURING COMPANY, SYRACUSE, N. Y.

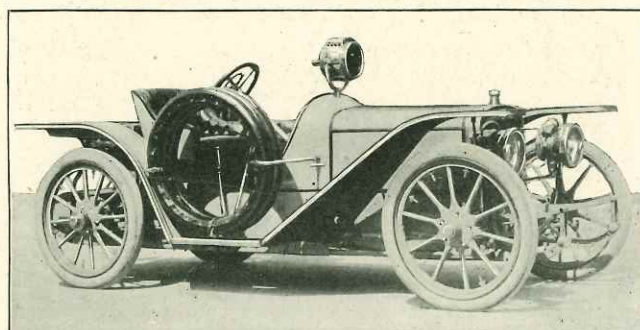
CAR—Franklin.
 MODEL—G, runabout.
 PRICE—\$1,800.
 WEIGHT—1,250 pounds.
 SEATING CAPACITY—Two.
 MOTOR—Four-cylinder horizontal.
 CONTROL — Throttle-spark-governor.
 HORSEPOWER—12.
 VALVES—Mechanical — with auxiliary exhaust.
 COOLING—Air.



IGNITION—Jump spark-battery.
 CARBURETER—Float feed automatic.
 LUBRICATION—Force feed-splash.
 TRANSMISSION—Sliding gear, three speed.
 CLUTCH—Multiple disc.
 DRIVE—Bevel gear.
 WHEEL BASE—90-in. Tread 54 in.
 BRAKES—Double acting on drive shaft and rear hubs.

THE AMERICAN MOTOR CAR CO., INDIANAPOLIS, IND.

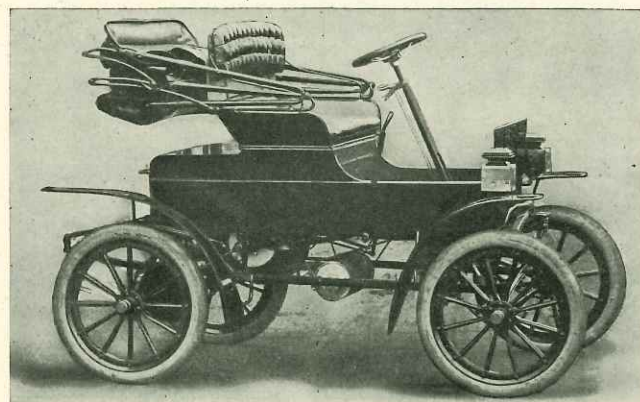
CAR—American
 MODEL—1907 roadster
 PRICE—\$3,250
 WEIGHT—2,360 pounds
 SEATING CAPACITY—2
 MOTOR—Four-cylinder vertical
 CONTROL—Spark and throttle
 HORSEPOWER—45 at 1,000 r. p. m.
 VALVES—One side-mechanical
 COOLING—Radiator, pump and fan



IGNITION—High-tension magneto-battery
 CARBURETER—Float feed
 LUBRICATION—Lunkenheimer mechanical oiler
 TRANSMISSION—Sliding progressive, three speed
 CLUTCH—Leather faced cone
 DRIVE—Shaft
 WHEEL BASE—106 in. Tread, 56 in.
 BRAKES—On rear wheels

THE FOREST CITY MOTOR CAR CO., MASSILLON, O.

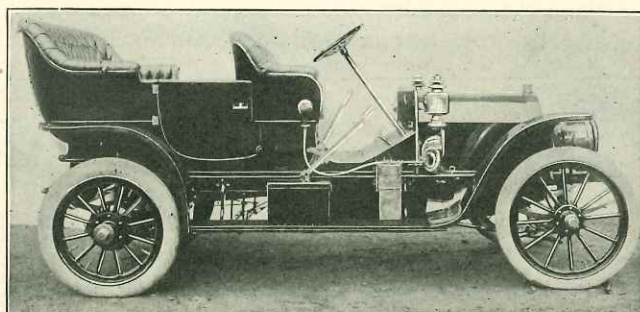
CAR—Jewel.
 MODEL—D, runabout.
 PRICE—\$600.
 WEIGHT—900 pounds.
 SEATING CAPACITY—Two.
 MOTOR—One-cylinder two-cycle horizontal.
 CONTROL—Spark and throttle.
 HORSEPOWER—8-10 at 1,500 r. p. m.
 VALVES—None.
 COOLING—Radiator and pump.



IGNITION—Jump spark.
 CARBURETER—Jewel.
 LUBRICATION—Automatic.
 TRANSMISSION — Planetary, two speed.
 CLUTCH—Not given.
 DRIVE—Nickel steel chain.
 WHEEL BASE—68 in. Tread 50 in.
 BRAKES—Rear axle, transmission.

MOON MOTOR CAR CO., ST. LOUIS.

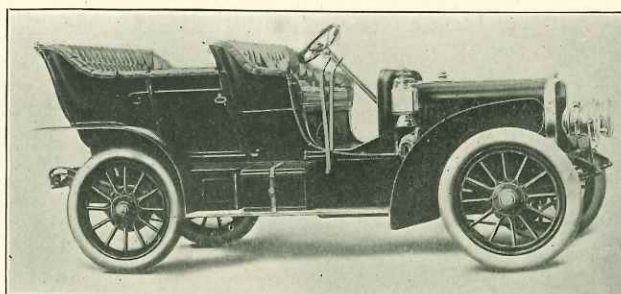
CAR—Moon.
 MODEL—C, touring car.
 PRICE—\$3,500.
 WEIGHT—2,600 pounds.
 SEATING CAPACITY—Five.
 MOTOR—Four-cylinder vertical.
 CONTROL—Spark and throttle, side lever.
 HORSEPOWER—30-35.
 VALVES—In heads, mechanical, cam shaft top of cylinders.
 COOLING—Radiator, pump and fly-wheel fan.



IGNITION—Jump spark, storage battery.
 CARBURETER — Automatic spray type.
 LUBRICATION—Force feed oiler.
 TRANSMISSION — Selective sliding gear, four speed.
 CLUTCH—Multiple disc.
 DRIVE—Flexible shaft, universal joints.
 WHEEL BASE—110 in. Tread 56 in.
 BRAKES—Internal, external, rear hubs.

THE WINTON MOTOR CARRIAGE CO., CLEVELAND, O.

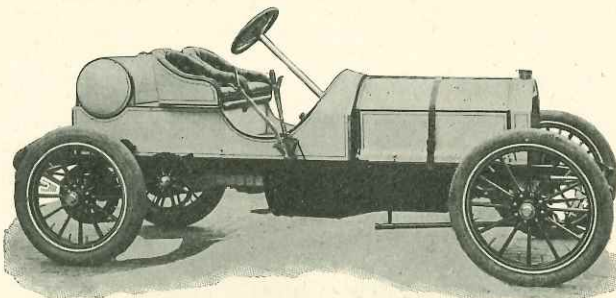
CAR—Winton
 MODEL—M, touring car
 PRICE—\$3,500
 WEIGHT—Not given
 SEATING CAPACITY—7
 MOTOR—Four-cylinder vertical
 CONTROL—Throttle and foot
 HORSEPOWER—40 at 1,000 r. p. m.
 VALVES—On one side, mechanical
 COOLING—Radiator, pump and fan



IGNITION—Jump spark-dry-storage battery
 CARBURETER—Automatic
 LUBRICATION—"Shooting" oiler
 TRANSMISSION—Sliding gear, force feed
 CLUTCH—Multiple disc
 DRIVE—Shaft
 WHEEL BASE—112 in., Tread 56½ in.
 BRAKES—Four on rear hubs

APPERSON BROS. AUTO. CO., KOKOMO, IND.

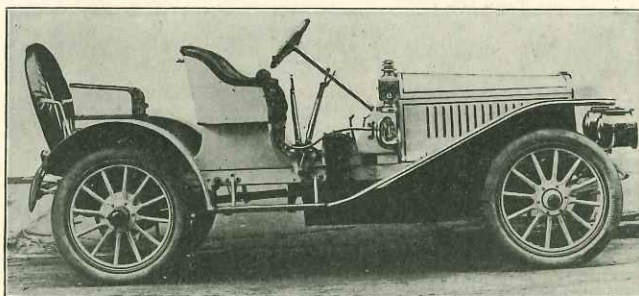
CAR—Apperson Jack Rabbit
 MODEL—Semi-racer
 PRICE—\$5,000
 WEIGHT—1,800 pounds
 SEATING CAPACITY—2
 MOTOR—Four-cylinder vertical
 CONTROL—Spark, throttle-foot
 HORSEPOWER—50-60 at 1,100 r. p. m.
 VALVES—Piston type-mechanical
 COOLING—Radiator, pump and fan



IGNITION—Double-magneto-storage
 CARBURETER—Apperson Krebs type
 LUBRICATION—Splash
 TRANSMISSION—Sliding gear, selective, four speed
 CLUTCH—Contracting band-metal to metal
 DRIVE—Double side chain
 WHEEL BASE—106 in., Tread 56 in.
 BRAKES—Both, rear wheels

CLEVELAND MOTOR CAR CO., CLEVELAND, O.

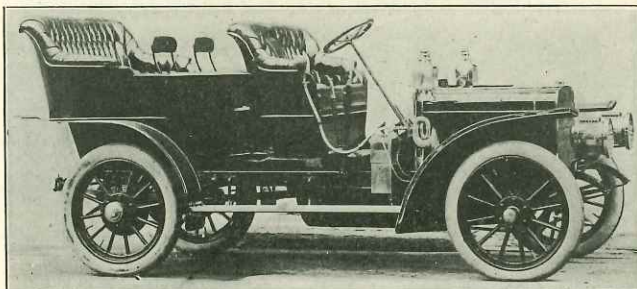
CAR—Cleveland
 MODEL—Gentleman's roadster
 PRICE—\$3,750
 WEIGHT—2,300 pounds
 SEATING CAPACITY—3
 MOTOR—Four-cylinder vertical
 CONTROL—Hand throttle and foot
 HORSEPOWER—30-35
 VALVES—Opposite sides-mechanical
 COOLING—Radiator, pump and fan



IGNITION—Make and break, S-B magneto
 CARBURETER—Float feed
 LUBRICATION—Force feed
 TRANSMISSION—Sliding gear, progressive, three speed
 CLUTCH—Cone, leather faced
 DRIVE—Shaft
 WHEEL BASE—104 in., Tread 56 in.
 BRAKES—Expanding

THE CLEVELAND MOTOR CAR CO., CLEVELAND, O.

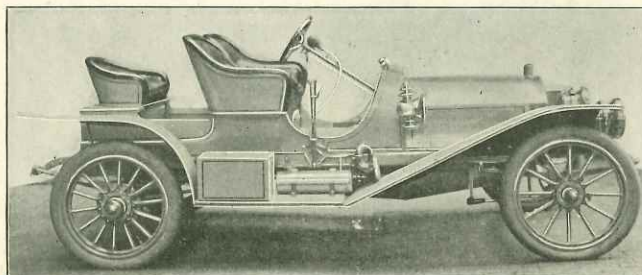
CAR—Cleveland
 MODEL—G, 1907
 PRICE—\$4,000
 WEIGHT—2,400 pounds
 SEATING CAPACITY—5-7
 MOTOR—Four-cylinder vertical
 CONTROL—Spark, throttle and foot
 HORSEPOWER—30-35 at 1,000 r. p. m.
 VALVES—Opposite-mechanical
 COOLING—Radiator and pump



IGNITION—Make and break, S-B magneto
 CARBURETER—Float feed
 LUBRICATION—Force feed
 TRANSMISSION—Progressive sliding gear, three speed
 CLUTCH—Cone, leather faced-cork insert
 DRIVE—Bevel gear-shaft
 WHEEL BASE—104 in., Tread 54 in.
 BRAKES—Not given

DAYTON MOTOR CAR CO., DAYTON, O.

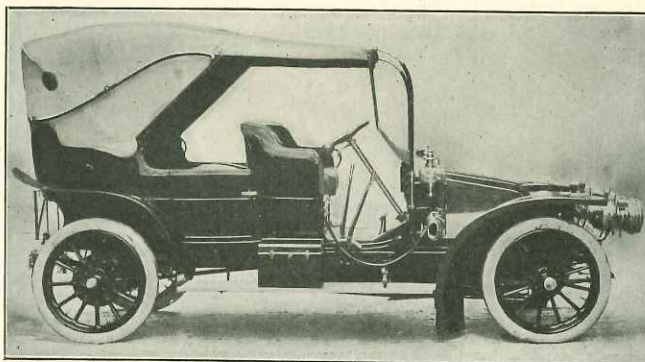
CAR—Stoddard-Dayton
 MODEL—K, runabout
 PRICE—\$2,500
 WEIGHT—2,000 pounds
 SEATING CAPACITY—2
 MOTOR—Four-cylinder vertical
 CONTROL—Spark and throttle
 HORSEPOWER—35-40 at 1,000 r. p. m.
 VALVES—Mechanical
 COOLING—Radiator, pump and fan



IGNITION—Jump spark-storage battery
 CARBURETER—Dayton water jacketed
 LUBRICATION—Force feed
 TRANSMISSION—Selective sliding gear, three speed
 CLUTCH—Cone
 DRIVE—Shaft
 WHEEL BASE—114 in. Tread, 56 in.
 BRAKES—Transmission - rear hubs

RENAULT FRERES SELLING BRANCH, CHICAGO.

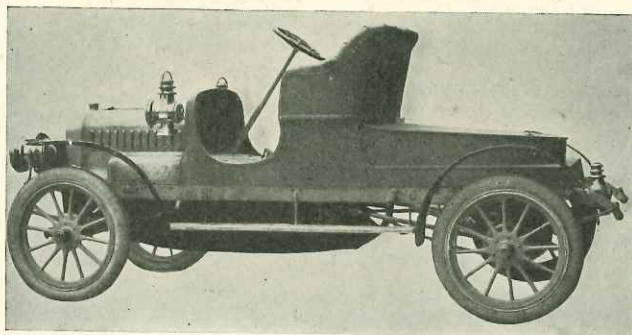
CAR—Renault
 MODEL—Alphonso victoria
 PRICE—\$6,750
 WEIGHT—2,200 pounds
 SEATING CAPACITY—5-7
 MOTOR—Four-cylinder vertical
 CONTROL—Spark and throttle-foot
 HORSEPOWER—14-20 at 1,000 r. p. m.
 VALVES—One side-mechanical
 COOLING—Thermo syphon-radiator-fly-wheel fan



IGNITION—Simms-Bosch high-tension
 CARBURETER—Renault automatic
 LUBRICATION—Mechanical on dash
 TRANSMISSION—Gear-Renault
 CLUTCH—Renault expanding ring
 DRIVE—Bevel gear-shaft
 WHEEL BASE—120 in. Tread, 55 in.
 BRAKES—Internal expanding-band

MOTORCAR COMPANY, DETROIT, MICH.

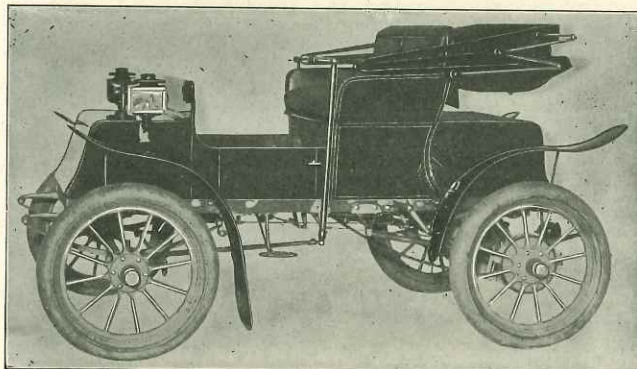
CAR—Cartercar
 MODEL—E, folding tonneau
 PRICE—\$1,350
 WEIGHT—1,850 pounds
 SEATING CAPACITY—2 or 4
 MOTOR—Two-cylinder horizontal opposed
 CONTROL—Spark and throttle-side lever
 HORSEPOWER—20-24 at 1,000 r. p. m.
 VALVES—Mechanical
 COOLING—Vertical tube radiator



IGNITION—Jump spark-timer-dry cells
 CARBURETER—Universal
 LUBRICATION—Lavigne positive oiler
 TRANSMISSION—Carter's friction
 CLUTCH—Not used
 DRIVE—Single chain
 WHEEL BASE—96 in. Tread, 56 in.
 BRAKES—Friction discs-rear hubs

BAKER MOTOR VEHICLE CO., CLEVELAND, O.

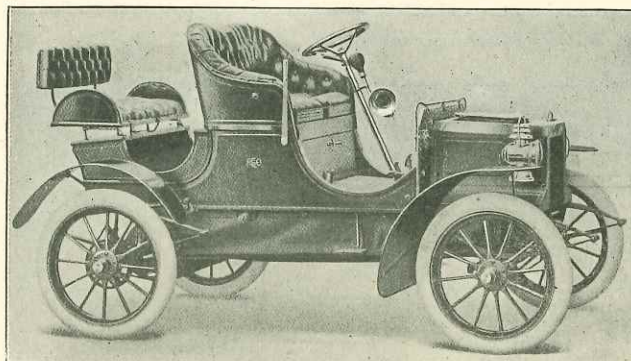
CAR—Baker electric
 MODEL—S, runabout
 PRICE—\$1,800
 WEIGHT—1,500 pounds
 SEATING CAPACITY—2
 MOTOR—Electric-series wound
 CONTROL—Continuous torque system
 HORSEPOWER—2 rated
 BATTERIES—24 cells-9 MV.



MILEAGE—Maximum, 13 to 15 miles per hour
 BEARINGS—Ball throughout
 TRANSMISSION—Silent chain reduction
 DRIVE—Single chain
 STEERING GEAR—Side lever
 WHEEL BASE—70 in., Tread 56 in.
 BRAKES—Two on rear wheels

REO MOTOR CAR CO., LANSING, MICH.

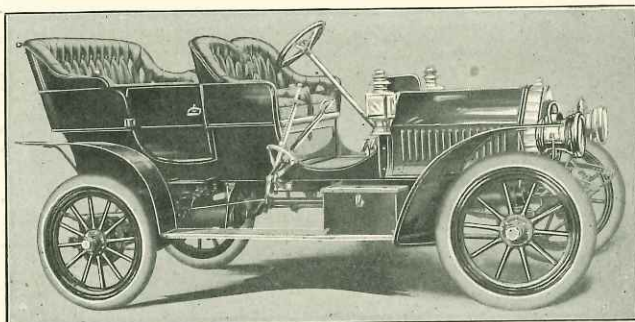
CAR—Reo
 MODEL—B, runabout
 PRICE—\$675, with folding seat
 WEIGHT—1,150 pounds
 SEATING CAPACITY—2 to 4
 MOTOR—One-cylinder horizontal
 CONTROL—Spark-foot throttle
 HORSEPOWER—8
 VALVES—Mechanical
 COOLING—Radiator and pump



IGNITION — Jump spark-dry battery
 CARBURETER—Float feed-Reo special
 LUBRICATION—Gravity feed
 TRANSMISSION — Planetary, two speed
 CLUTCH—Multiple disc
 DRIVE—Single chain-direct
 WHEEL BASE—78 in., Tread 56 in.
 BRAKES—Two, double acting on hubs

CADILLAC MOTOR CAR CO., DETROIT, MICH.

CAR—Cadillac
MODEL—G, touring car
PRICE—\$2,000
WEIGHT—Not given
SEATING CAPACITY—5
MOTOR—Four-cylinder vertical
CONTROL—Governor and spark
HORSEPOWER—20
VALVES—In heads, mechanical
COOLING—Radiator, pump and fan



IGNITION—Jump spark
CARBURETER—Float feed type
LUBRICATION—Automatic splash
TRANSMISSION—Selective sliding gear, three speed
CLUTCH—Cone type
DRIVE—Shaft, bevel gear
WHEEL BASE—100 in. Tread, 56 in.
BRAKES—Two, on rear hubs

THE RAUCH & LANG CARRIAGE CO., CLEVELAND, O.

CAR—R. & L.
MODEL—Surrey, with top
PRICE—\$2,800
WEIGHT—2,800 pounds
SEATING CAPACITY—5
MOTOR—Hertner special type C
CONTROL—Continuous torque controller
HORSEPOWER—Four-48 volts
BATTERY—24 cell, 190 ampere hours capacity each

SPEEDS—9 to 17 miles per hour
MILEAGE—50 miles at 13 miles per hour
STEERING—Wheel
DRIVE—Counter shaft-side chains
WHEEL BASE—91 in.
WHEELS—Artillery type 36 in.
BRAKES—Rear hubs and electric
FINISH—Blue and green, or as desired

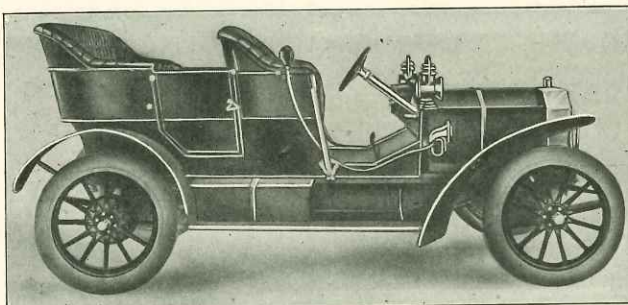
THE RAUCH & LANG CARRIAGE CO., CLEVELAND, O.

CAR—R. & L.
MODEL—Stanhope electric
PRICE—\$1,850
WEIGHT—1,750 pounds
SEATING CAPACITY—2
MOTOR—Hertner special type C
CONTROL—Continuous torque controller
HORSEPOWER—Two-48 volts
BATTERY—24 cell, 108 ampere hours capacity each

SPEEDS—10 to 20 miles per hour
MILEAGE—75 miles at 13 miles per hour
STEERING—Side lever
DRIVE—Counter shaft-side chains
WHEEL BASE—73 in.
WHEELS—Artillery type 32 in.
BRAKES—Hubs-motor-electric
FINISH—Blue and green, or as desired

SMITH AUTOMOBILE CO., TOPEKA, KAN.

CAR—Smith
MODEL—1907, touring car
PRICE—\$2,500
WEIGHT—2,450 pounds
SEATING CAPACITY—6
MOTOR—Four-cylinder vertical
CONTROL—Hand throttle and pedal
HORSEPOWER—24, French rating
VALVES—Mechanical
COOLING—Radiator, pump and fan



IGNITION—Jump spark-storage dry battery
CARBURETER—Smith float feed
LUBRICATION—Automatic
TRANSMISSION—Sliding gear, three speed
CLUTCH—Stafford multiple disc
DRIVE—Tubular shaft
WHEEL BASE—107 in., Tread 56 in.
BRAKES—Transmission and rear hubs

MARVEL MOTOR CAR CO., DETROIT, MICH.

CAR—Marvel Roadster
MODEL—A, runabout
PRICE—\$800
WEIGHT—1,300 pounds
SEATING CAPACITY—2
MOTOR—Two-cylinder opposed
CONTROL—Lever foot pedals
HORSEPOWER—14 at 1,200 r. p. m.
VALVES—Mechanical

COOLING—Radiator, thermo syphon
IGNITION—Jump spark
CARBURETER—Schebler
LUBRICATION—Mechanical
TRANSMISSION—Planetary, two speed
CLUTCH—Cone type
DRIVE—Bevel gear, shaft
WHEEL BASE—84 in. Tread, 56 in.
BRAKES—Rear hub

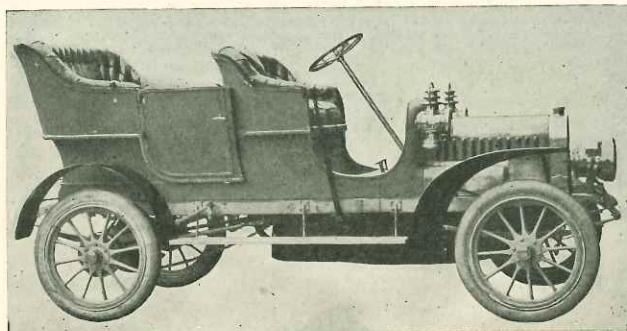
HARRISON WAGON CO., GRAND RAPIDS, MICH.

CAR—Harrison
MODEL—C, touring
PRICE—\$5,000
WEIGHT—2,750 pounds
SEATING CAPACITY—7
MOTOR—Four-cylinder vertical
CONTROL—Spark and throttle
HORSEPOWER—50 at 1,500 r. p. m.
VALVES—In cylinder heads

COOLING—Radiator
IGNITION—Jump spark, storage battery
CARBURETER—Buffalo
LUBRICATION—Mechanical
TRANSMISSION—Individual clutches
CLUTCH—Internal expanding
DRIVE—Shaft
WHEEL BASE—123 in. Tread, 54 in.
BRAKES—Internal and external, rear axle

MOTORCAR COMPANY, DETROIT, MICH.

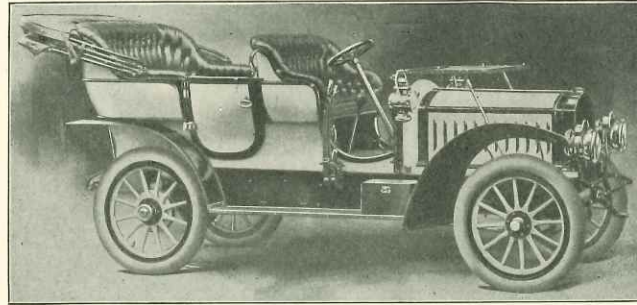
CAR—Cartercar
MODEL—A, touring car
PRICE—\$1,350
WEIGHT—1,850 pounds
SEATING CAPACITY—5
MOTOR—Two-cylinder horizontal opposed
CONTROL—Spark and throttle-side lever
HORSEPOWER—24 at 1,000 r. p. m.
VALVES—Mechanical
COOLING—Radiator - vertical tube



IGNITION—Jump spark-timer-dry cells
CARBURETER—Universal
LUBRICATION—Lavigne positive oiler
TRANSMISSION—Carter's friction
CLUTCH—Not used
DRIVE—Single chain
WHEEL BASE—96 in. Tread, 56 in.
BRAKES—Friction discs-rear hubs

AUSTIN AUTOMOBILE CO., GRAND RAPIDS, MICH.

CAR—Austin
MODEL—LX-T
PRICE—\$4,500
WEIGHT—3,300 pounds
SEATING CAPACITY—8
MOTOR—Four-cylinder vertical
CONTROL—Spark and throttle
HORSEPOWER—60 at 1,100 r. p. m.
VALVES—Mechanical
IGNITION — Jump spark—two unit



COOLING—Radiator and pump
CARBURETER—Automatic
LUBRICATION — Mechanical oiler
TRANSMISSION — Selective sliding gear, four speed
CLUTCH—Multiple disc
DRIVE — Direct-floating rear axle
WHEEL BASE—116 in., Tread 55 in.
BRAKES — Rear wheels—drive shaft

RAPID MOTOR VEHICLE CO., PONTIAC, MICH.

CAR—Rapid
MODEL—D-132
PRICE—\$1,800
WEIGHT—3,050 pounds
SEATING CAPACITY—12
MOTOR—Two-cylinder
CONTROL—Spark and throttle
HORSEPOWER— 24 at 900 r. p. m.
VALVES—Mechanical

COOLING—Radiator and pump
IGNITION—Jump spark
CARBURETER—Automatic
LUBRICATION — Gear-driven oiler
TRANSMISSION — Planetary, two speed
CLUTCH—Friction
DRIVE—Side chains
WHEEL BASE — 90 in. Tread, 56 in.
BRAKES—Rear wheels

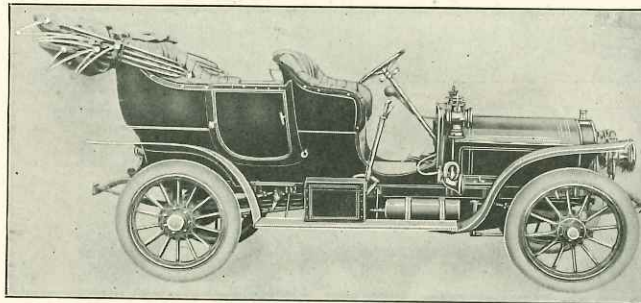
RAPID MOTOR VEHICLE CO., PONTIAC, MICH.

CAR—Rapid
MODEL—D-21, delivery
PRICE—\$1,600
WEIGHT—2,600 pounds
CARRYING CAPACITY — 1 ton
MOTOR—Two-cylinder
CONTROL—Spark and throttle
HORSEPOWER — 24 at 900 r. p. m.
VALVES—Mechanical

COOLING—Radiator and pump
IGNITION—Jump spark
CARBURETER—Automatic
LUBRICATION—Mechanical
TRANSMISSION — Planetary, two speed
CLUTCH—Friction
DRIVE—Side chains
WHEEL BASE—86 in. Tread, 56 in.
BRAKES—Internal

DAYTON MOTOR CAR CO., DAYTON, O.

CAR—Stoddard-Dayton.
MODEL—F, touring car.
PRICE—\$2,500.
WEIGHT—2,400 pounds.
SEATING CAPACITY—Five.
MOTOR—Four-cylinder vertical.
CONTROL—Spark and throttle.
HORSEPOWER—30-35 at 1,200 r. p. m.
VALVES—Opposite sides, mechanical.
COOLING—Radiator, pump and fan.



IGNITION—Jump spark.
CARBURETER—Schebler automatic.
LUBRICATION—Kirkwood mechanical.
TRANSMISSION—Selective, 3-speed.
CLUTCH—Cone type.
DRIVE—Shaft.
WHEEL BASE—105 in. Tread 56½ in.
BRAKES—Three, expanding.

C. A. TILESTON COMPANY, CHICAGO

CAR—Panhard
MODEL—1907, landaulet
PRICE—\$10,000
WEIGHT—3,350 pounds
SEATING CAPACITY—7
MOTOR—Four-cylinder vertical
CONTROL—Spark and throttle
HORSEPOWER—35 at 1,200 r. p. m.
VALVES—Opposite, mechanical
CARBURETER—Panhard

COOLING — Radiator, pump and fan
IGNITION—Jump spark, magneto
LUBRICATION—Force feed
TRANSMISSION — Progressive sliding gear, four speed
CLUTCH—Multiple
DRIVE—Double chain
WHEEL BASE — 124 in. Tread, 56 in.
BRAKES — Differential, rear wheels

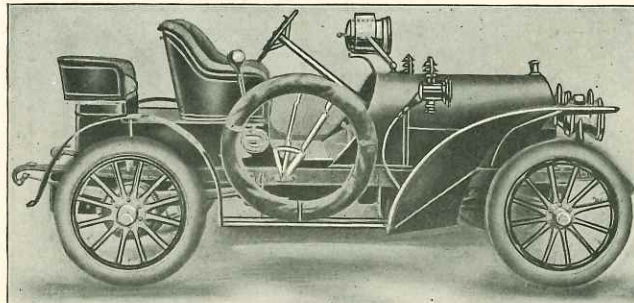
C. A. TILESTON COMPANY, CHICAGO

CAR—Delaunay-Belleville.
MODEL—1907, coupe limousine
PRICE—\$7,600
WEIGHT—2,450 pounds
SEATING CAPACITY—7
MOTOR—Four-cylinder vertical
CONTROL—Spark and throttle
HORSEPOWER — 20 at 1,200 r. p. m.
VALVES—Mechanical

COOLING — Radiator, pump and fan
IGNITION—Jump spark, magneto
CARBURETER — Delaunay-Belleville
LUBRICATION—Force feed
TRANSMISSION — Sliding, four speed
CLUTCH—Multiple disc
DRIVE—Shaft
WHEEL BASE—114 in. Tread, 54½ in.
BRAKES—Shaft, rear wheels

TRIUMPH MOTOR CAR CO., CHICAGO

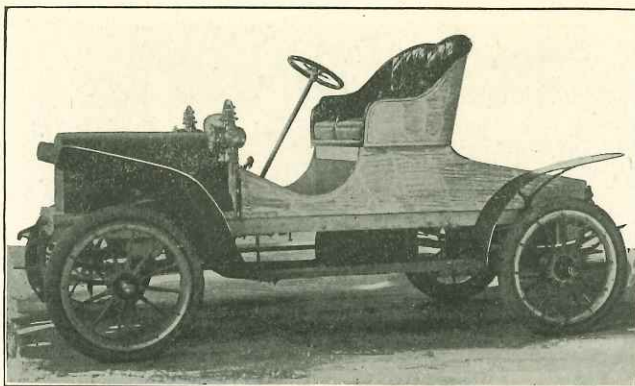
CAR—Triumph
MODEL—Gentleman's roadster
PRICE—\$2,800
WEIGHT—2,200 pounds
SEATING CAPACITY—3
MOTOR—Four-cylinder vertical
CONTROL—Spark and throttle
HORSEPOWER—30 at 900 r. p. m.
VALVES — Same side-mechanical
COOLING—Radiator and pump



IGNITION — Jump spark-magneto-battery
CARBURETER—Triumph special
LUBRICATION — Force feed-mechanical
TRANSMISSION — Selective sliding gear, three speed
CLUTCH—Multiple disc
DRIVE—Bevel gear
WHEEL BASE—108 in., Tread 54 in.
BRAKES—Four on rear hubs

MONARCH MOTOR CAR CO., FRANKLIN PARK, ILL.

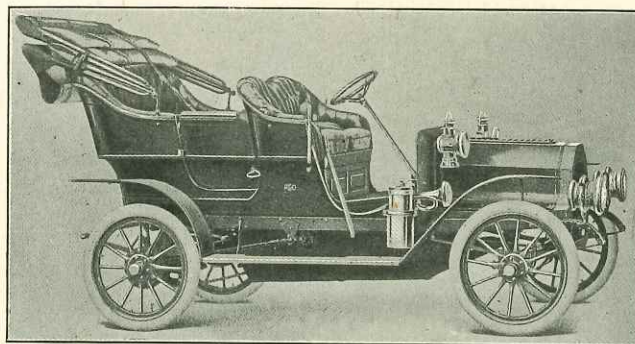
CAR—Monarch roadster
 MODEL—E, runabout
 PRICE—\$900
 WEIGHT—1,000 pounds
 SEATING CAPACITY—2
 MOTOR—Two-cylinder horizontal
 CONTROL—Spark and throttle
 HORSEPOWER—12-14 at 1,000
 r. p. m.
 VALVES—Mechanical
 COOLING—Air



IGNITION—Jump spark
 CARBURETER—Schebler
 LUBRICATION—Grease cups-mechanical
 TRANSMISSION—Planetary, two speed
 CLUTCH—Ball race
 DRIVE—Shaft
 WHEEL BASE—88 in., Tread 54 in.
 BRAKES—Transmission-rear hubs

REO MOTOR CAR CO., LANSING, MICH.

CAR—Reo
 MODEL—A, touring car
 PRICE—\$1,250, without top
 WEIGHT—1,850 pounds
 SEATING CAPACITY—5
 MOTOR—Double opposed-horizontal
 HORSEPOWER—16-20
 VALVES—Mechanical
 COOLING—Radiator and pump
 IGNITION—Jump spark-dry battery



CARBURETER—Reo special-float feed
 LUBRICATION—Automatic
 TRANSMISSION—Planetary, two speed
 CLUTCH—Multiple disc
 DRIVE—Single chain
 WHEEL BASE—94 in., Tread 56 in.
 BRAKES—Three-sprocket and hubs

THE BARTHOLOMEW CO., PEORIA, ILL.

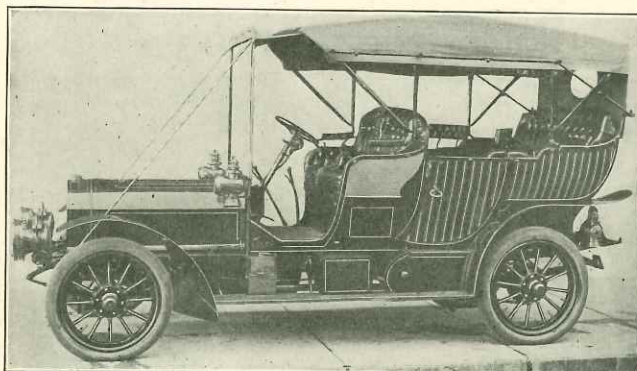
CAR—Glide
 MODEL—G, touring car
 PRICE—\$2,500
 WEIGHT—2,500 pounds
 SEATING CAPACITY—5 to 7
 MOTOR—Four-cylinder vertical
 CONTROL—Spark and throttle
 HORSEPOWER—36-40 at 1,200 r. p. m.
 VALVES—One side, mechanical
 COOLING—Radiator and pump



IGNITION—Jump spark-storage-dry battery
 CARBURETER—Schebler
 LUBRICATION—Force feed-splash
 TRANSMISSION—Selective sliding gear
 CLUTCH—Multiple disc
 DRIVE—Direct, bevel gear
 WHEEL BASE—120 in. Tread, 56 in.
 BRAKES—Multiple disc on each hub

APPERSON BROS. AUTO. CO., KOKOMO, IND.

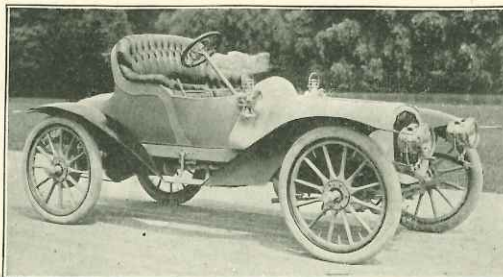
CAR—Apperson
 MODEL—A4, touring car
 PRICE—\$4,700
 WEIGHT—3,000 pounds
 SEATING CAPACITY—5 to 7
 MOTOR—Four-cylinder vertical
 CONTROL—Foot-spark and throttle
 HORSEPOWER—50 at 1,200 r. p. m.
 VALVES—Opposite-mechanical
 COOLING—Radiator-eccentric pump



IGNITION—Jump spark-magneto-battery
 CARBURETER—Automatic-float feed
 LUBRICATION—McCord oiler
 TRANSMISSION—Selective, four speed
 CLUTCH—Compression band
 DRIVE—Double chain
 WHEEL BASE—116 in., Tread 56 in.
 BRAKES—Compression band

THE AEROCAR COMPANY, DETROIT, MICH.

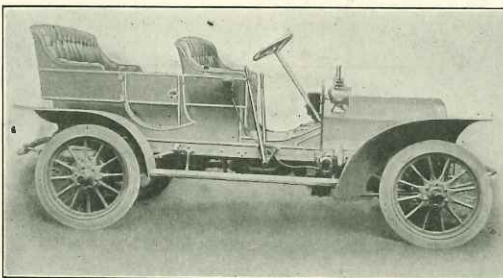
CAR—Aerocar
 MODEL—C, runabout
 PRICE—\$2,000
 WEIGHT—2,000 pounds
 SEATING CAPACITY—2
 MOTOR—Four-cylinder vertical
 CONTROL—Throttle and spark
 HORSEPOWER—20-24 at 1,200 r. p. m.
 VALVES—In heads, mechanical
 COOLING—Air-fan



IGNITION—Jump spark-storage-dry battery
 CARBURETER—Schebler
 LUBRICATION—Mechanical oiler
 TRANSMISSION—Sliding gear, three speed
 CLUTCH—Multiple disc
 DRIVE—Shaft
 WHEEL BASE—104 in. Tread, 56 in.
 BRAKES—Rear wheels-shaft

THE AEROCAR COMPANY, DETROIT, MICH.

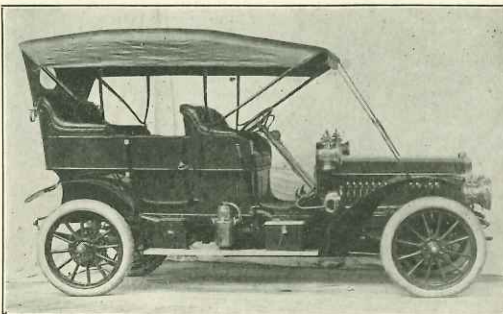
CAR—Aerocar
 MODEL—D, light touring car
 PRICE—\$2,000
 WEIGHT—2,000 pounds
 SEATING CAPACITY—4
 MOTOR—Four-cylinder vertical
 CONTROL—Spark and throttle
 HORSEPOWER—20
 VALVES—Mechanical
 COOLING—Air and fan
 IGNITION—Jump spark-battery



CARBURETER—Float feed type
 LUBRICATION—Splash-mechanical oiler
 TRANSMISSION—Sliding gear, three speed
 CLUTCH—Aluminum leather faced cone
 DRIVE—Shaft
 WHEEL BASE—104 in., Tread 56 in.
 BRAKES—Two

ST. LOUIS CAR COMPANY, ST. LOUIS, MO.

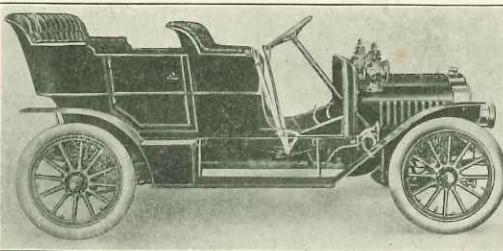
CAR—American Mors
 MODEL—S, touring car
 PRICE—\$6,000
 WEIGHT—3,300 pounds
 SEATING CAPACITY—7
 MOTOR—Four-cylinder vertical
 CONTROL—Foot pedals and throttle
 HORSEPOWER—40-52 at 1,200 r. p. m.
 VALVES—Opposite sides, mechanical
 COOLING—Radiator, pump and fan



IGNITION—Make and break-jump spark
 CARBURETER—Automatic float type
 LUBRICATION—Splash
 TRANSMISSION—Sliding gear
 CLUTCH—Conical leather
 DRIVE—Double chain
 WHEEL BASE—120 in., Tread 56 in.
 BRAKES—Rear drums and differential

THE E. H. V. COMPANY, MIDDLETOWN, CONN.

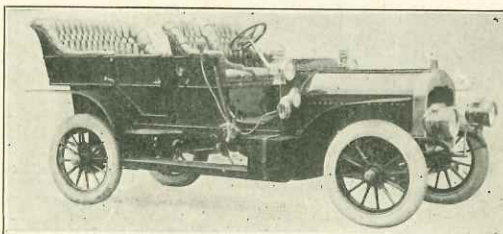
CAR—Compound
 MODEL—H, touring car
 PRICE—\$3,750
 WEIGHT—2,550 pounds
 SEATING CAPACITY—7
 MOTOR—Six-cylinder compound
 CONTROL—Spark and throttle
 HORSEPOWER—40
 VALVES—Mechanical
 COOLING—Radiator, pump and fan



IGNITION—Jump spark-dry batteries
 CARBURETER—Special design
 LUBRICATION—Mechanical
 TRANSMISSION—Sliding gear, four speed
 CLUTCH—Multiple disc
 DRIVE—Double chains
 WHEEL BASE—115 in., Tread 56 in.
 BRAKES—Drive shaft-rear drums

DOLSON AUTOMOBILE CO., CHARLOTTE, MICH.

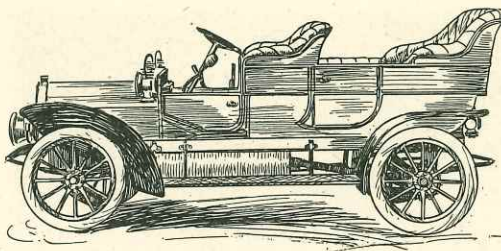
CAR—Dolson
 MODEL—F, touring car
 PRICE—\$3,250
 WEIGHT—3,000 pounds
 SEATING CAPACITY—7
 MOTOR—Four-cylinder vertical
 CONTROL—Spark and throttle
 HORSEPOWER—55 at 950 r. p. m.
 VALVES—One side, mechanical
 COOLING—Radiator, pump and fan



IGNITION—Jump spark
 CARBURETER—Schebler
 LUBRICATION—Force feed oiler
 TRANSMISSION—Selective gear
 CLUTCH—Disc
 DRIVE—Shaft
 WHEEL BASE—123 in., Tread 56 in.
 BRAKES—Both types on rear hubs

THE DRAGON AUTOMOBILE CO., PHILADELPHIA, PA.

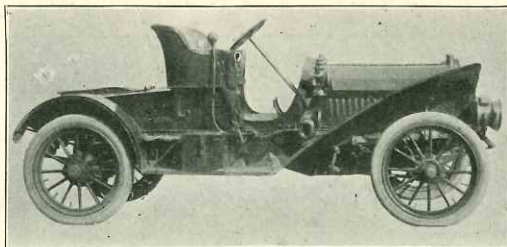
CAR—Dragon
 MODEL—Touring car
 PRICE—\$2,000
 WEIGHT—1,800 pounds
 SEATING CAPACITY—5
 MOTOR—Four-cylinder vertical
 CONTROL—Spark and throttle
 HORSEPOWER—24-26 at 1,200 r. p. m.
 VALVES—Opposite sides, mechanical



COOLING—Radiator, pump and fan
 IGNITION—Jump spark
 CARBURETER—Holley automatic
 LUBRICATION—Force feed, mechanical
 TRANSMISSION—Sliding gear
 CLUTCH—Cone type
 DRIVE—Shaft
 WHEEL BASE—104 in., Tread 54 in.
 BRAKES—Four on rear hubs

DOLSON AUTOMOBILE CO., CHARLOTTE, MICH.

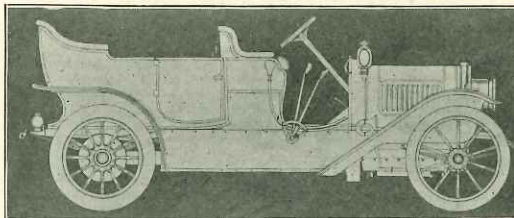
CAR—Dolson
 MODEL—"Cannon Ball" runabout
 PRICE—\$3,250
 WEIGHT—2,800 pounds
 SEATING CAPACITY—3
 MOTOR—Four-cylinder vertical
 CONTROL—Spark and throttle
 HORSEPOWER—55-60
 VALVES—Mechanical
 COOLING — Radiator, pump and fan



IGNITION — Jump spark-storage battery
 CARBURETER—Optional
 LUBRICATION—Force feed oiler
 TRANSMISSION—Selective, three speed
 CLUTCH—Multiple disc
 DRIVE—Shaft
 WHEEL BASE—110 in., Tread 56 in.
 BRAKES — Internal-external-rear hubs

THE DE LUXE MOTOR CAR CO., DETROIT, MICH.

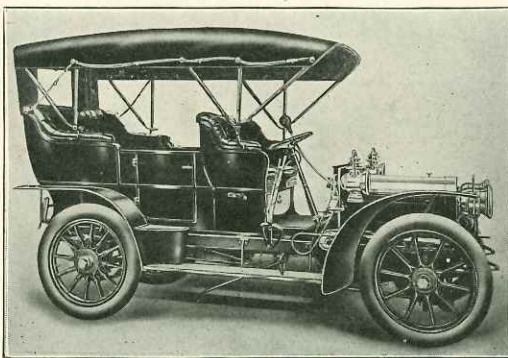
CAR—De Luxe
 MODEL—Touring car
 PRICE—\$4,750
 WEIGHT—Not given
 SEATING CAPACITY—7
 MOTOR—Four-cylinder vertical
 CONTROL—Spark and throttle-foot pedal
 HORSEPOWER—50-60
 VALVES—In heads-20 deg. angle-mechanical
 CARBURETER—Special design



COOLING—Radiator, pump and fan
 IGNITION — High-tension S-B magneto
 LUBRICATION — Lunkenheimer oiler-hand pump
 TRANSMISSION—Sliding gear
 CLUTCH—Cone type
 DRIVE—Carbon shaft
 WHEEL BASE—121 in., Tread 56 in.
 BRAKES—Rear drums-shaft

THOMAS B. JEFFREY & CO., KENOSHA, WIS.

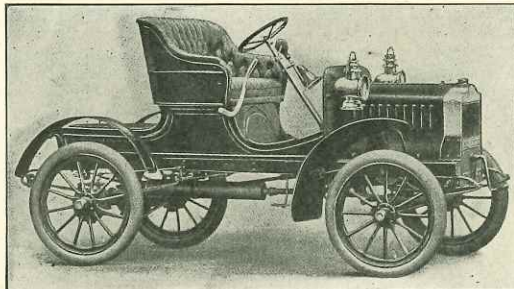
CAR—Rambler
 MODEL—24, touring car
 PRICE—\$2,000, with top
 WEIGHT—Not given
 SEATING CAPACITY—5
 MOTOR—Four-cylinder vertical
 CONTROL—Throttle and spark
 HORSEPOWER—25-30 at 800 r. p. m.
 VALVES—In heads-mechanical
 COOLING—Radiator, pump and fan



IGNITION—Jump spark
 CARBURETER—Float feed-automatic
 LUBRICATION—Mechanical force feed
 TRANSMISSION — Sliding gear, three speed
 CLUTCH—Cone type
 DRIVE—Shaft
 WHEEL BASE—106 in., Tread 56 in.
 BRAKES—Two sets on rear hubs

MAXWELL-BRISCOE MOTOR CO., TARRYTOWN, N. Y.

CAR—Maxwell
 MODEL—RL, runabout
 PRICE—\$825
 WEIGHT—1,150 pounds
 SEATING CAPACITY—2
 MOTOR—Two-cylinder opposed
 CONTROL—Spark and throttle
 HORSEPOWER—14
 VALVES—Mechanical
 COOLING—Radiator-natural circulation
 IGNITION—Jump spark-dry battery



CARBURETER—Maxwell float feed
 LUBRICATION — Compression, force feed
 TRANSMISSION—Planetary, two speed
 CLUTCH—Multiple disc-metal
 DRIVE — Bevel gear-universal joints
 WHEEL BASE—72 in., Tread 56 in.
 BRAKES — Double acting — rear hubs

HOLSMAN AUTOMOBILE COMPANY, CHICAGO, ILL.

CAR—Holsman
 MODEL—10, Goddard carriage
 PRICE—\$700
 WEIGHT—850
 SEATING CAPACITY—2
 MOTOR—Two-cylinder horizontal
 CONTROL—Throttle lever
 HORSEPOWER—10
 VALVES—Automatic - in cooling chamber
 COOLING—Air



IGNITION—Double jump spark
 CARBURETER—Float feed-automatic auxiliary
 LUBRICATION—Automatic force feed
 TRANSMISSION—Cable from power shaft
 CLUTCH—Cable tension
 DRIVE—Cable
 WHEEL BASE—76 in. Tread, 56 to 62 in.
 BRAKES—Two

JACKSON AUTOMOBILE CO., JACKSON, MICH.

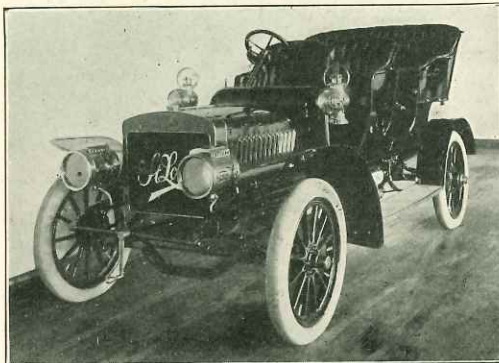
CAR—Jackson
 MODEL—G, touring car
 PRICE—\$2,500
 WEIGHT—2,800 pounds
 SEATING CAPACITY—5
 MOTOR—Four-cylinder vertical
 CONTROL—Spark and throttle
 HORSEPOWER—40-45 at 800 r. p. m.
 VALVES—In heads-mechanical
 COOLING—Radiator, pump and fan



IGNITION—Jump spark
 CARBURETER—Schebler
 LUBRICATION—Hill precision oiler
 TRANSMISSION—Sliding gear—three speed
 CLUTCH—Multiple disc
 DRIVE—Shaft
 WHEEL BASE—111 in., Tread 56 in.
 BRAKES—Double set on hubs

ST. LOUIS MOTOR CAR CO., PEORIA, ILL.

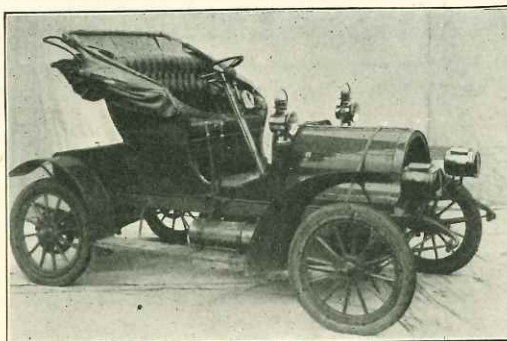
CAR—St. Louis
 MODEL—Type XVIII., touring car
 PRICE—\$2,500
 WEIGHT—Not given
 SEATING CAPACITY—5-7
 MOTOR—Four-cylinder vertical
 CONTROL—Spark and throttle
 HORSEPOWER—30-35
 VALVES—Same side-mechanical
 COOLING—Radiator, pump and fan



IGNITION—Jump spark
 CARBURETER—Automatic
 LUBRICATION—Force feed oiler
 TRANSMISSION—Selective sliding, three speed
 CLUTCH—Single disc-fiber inserts
 DRIVE—Bevel gear
 WHEEL BASE—108 in., Tread 56 in.
 BRAKES—Transmission-rear hubs

LOGAN CONSTRUCTION CO., CHILLICOTHE, O.

CAR—Logan Semi-Racer
 MODEL—O, runabout
 PRICE—\$1,500
 WEIGHT—1,587 pounds
 SEATING CAPACITY—2
 MOTOR—Four-cylinder vertical
 CONTROL—Spark and throttle
 HORSEPOWER—20-24 at 1,200 r. p. m.
 VALVES—Vertical mechanical
 COOLING—Air



IGNITION—Jump spark-storage battery
 CARBURETER—Float feed
 LUBRICATION—Positive force feed
 TRANSMISSION—Sliding gear, two speed
 CLUTCH—Expanding metal band
 DRIVE—Direct shaft
 WHEEL BASE—88 in., Tread 56½ in.
 BRAKES—Four on rear wheels

BUCKEYE MANUFACTURING CO., ANDERSON, IND.

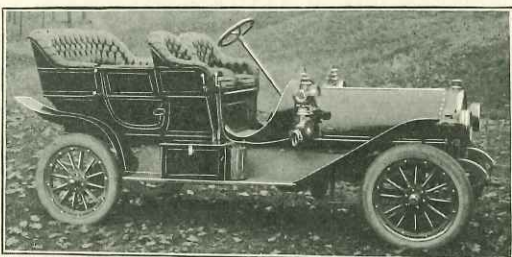
CAR—Lambert
 MODEL—J, roadster
 PRICE—\$1,800
 WEIGHT—1,900 pounds
 SEATING CAPACITY—2
 MOTOR—Four-cylinder Rutenber
 CONTROL—Spark and throttle
 HORSEPOWER—40
 VALVES—Same side, mechanical
 COOLING—Radiator, pump and fan



IGNITION—Jump spark-battery
 CARBURETER—Float feed type
 LUBRICATION—Force feed-splash
 TRANSMISSION—Friction discs
 CLUTCH—By engaging discs
 DRIVE—Shaft
 WHEEL BASE—105 in., Tread 56 in.
 BRAKES—Rear hubs and jack shaft

BUCKEYE MANUFACTURING CO., ANDERSON, IND.

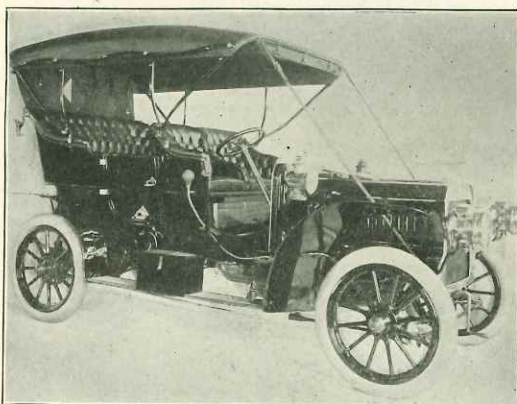
CAR—Lambert
 MODEL—H, touring car
 PRICE—\$2,000
 WEIGHT—1,900 pounds
 SEATING CAPACITY—5
 MOTOR—Four-cylinder Rutenber
 CONTROL—Spark and throttle
 HORSEPOWER—35-40
 VALVES—Mechanical, one side
 COOLING—Radiator, pump and fan



IGNITION—Jump spark
 CARBURETER—Float feed type
 LUBRICATION—Force feed-splash
 TRANSMISSION—Friction
 CLUTCH—By engaging friction
 DRIVE—Shaft
 WHEEL BASE—105 in. Tread, 56 in.
 BRAKES—Cross shaft, rear hubs

MOLINE AUTOMOBILE CO., EAST MOLINE, ILL.

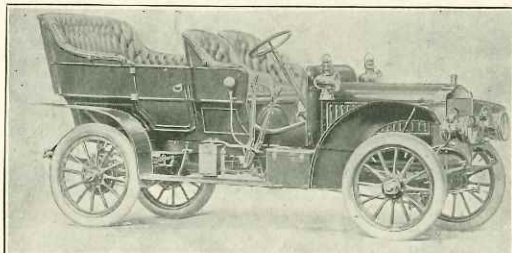
CAR—Moline
 MODEL—A, touring car
 PRICE—\$2,500
 WEIGHT—2,650 pounds
 SEATING CAPACITY—5
 MOTOR—Four-cylinder vertical
 CONTROL—Spark and throttle
 HORSEPOWER—35 at 1,100 r. p. m.
 VALVES—One side, mechanical
 COOLING—Radiator, pump and fan



IGNITION — Jump spark-storage battery
 CARBURETER—Float feed, automatic
 LUBRICATION—Mechanical oiler
 TRANSMISSION — Sliding gear, three speed
 CLUTCH—Leather faced cone
 DRIVE—Shaft
 WHEEL BASE—110 in., Tread 56 in.
 BRAKES — Four sets, on rear wheels

MAXWELL-BRISCOE MOTOR CO., TARRYTOWN, N. Y.

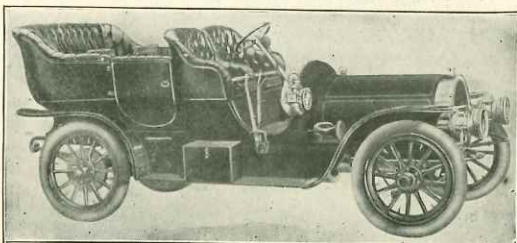
CAR—Maxwell
 MODEL—M, touring car
 PRICE—\$3,000
 WEIGHT—2,600 pounds
 SEATING CAPACITY—5
 MOTOR—Four-cylinder vertical
 CONTROL—Spark and throttle
 HORSEPOWER—36-40 at 1,000 r. p. m.
 VALVES—Opposite, mechanical
 COOLING — Radiator-thermo syphon



IGNITION—Jump spark
 CARBURETER—Maxwell
 LUBRICATION—Mechanical oiler
 TRANSMISSION — Sliding gear, three speed
 CLUTCH—Maxwell multiple disc
 DRIVE—Shaft
 WHEEL BASE—104 in., Tread 56 in.
 BRAKES—On rear hubs

NATIONAL MOTOR VEHICLE CO., INDIANAPOLIS, IND.

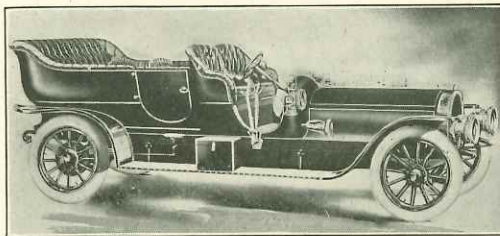
CAR—National
 MODEL—H, touring car
 PRICE—\$3,500
 WEIGHT—2,650 pounds
 SEATING CAPACITY—7
 MOTOR—Four-cylinder vertical
 CONTROL—Throttle and spark-governor
 HORSEPOWER—50 at 1,000 h. p. m.
 VALVES—Opposite, mechanical
 COOLING—Radiator, pump and fan



IGNITION—Jump spark magneto-battery
 CARBURETER—Schebler
 LUBRICATION—Mechanical force feed oiler
 TRANSMISSION — Sliding gear, three speed
 CLUTCH—Self-contained, leather face
 DRIVE—Shaft
 WHEEL BASE—112 in., Tread 54 in.
 BRAKES—Two systems, rear hub

NATIONAL MOTOR VEHICLE CO., INDIANAPOLIS, IND.

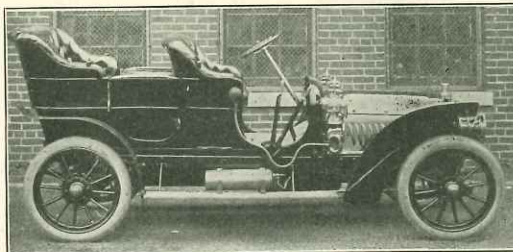
CAR—National
MODEL—L, touring car
PRICE—\$5,000
WEIGHT—3,200 pounds
SEATING CAPACITY—7
MOTOR—Six-cylinder vertical
CONTROL—Spark and throttle-governor
HORSEPOWER—75 at 1,000 r. p. m.
VALVES—Opposite mechanical
COOLING—Radiator, pump and fan



IGNITION—Jump spark-magneto-battery
CARBURETER—Schebler
LUBRICATION—Force feed-mechanical
TRANSMISSION—Sliding gear, three speed
CLUTCH—Self-contained, leather face
DRIVE—Shaft
WHEEL BASE—127 in., Tread 56½ in.
BRAKES—Two systems, rear hubs

PREMIER MOTOR MFG. CO., INDIANAPOLIS, IND.

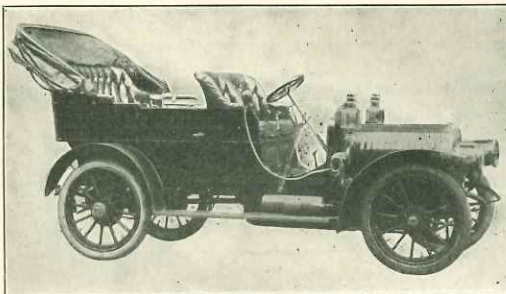
CAR—"Premier 24"
MODEL—24, touring car
PRICE—\$2,250
WEIGHT—2,300 pounds
SEATING CAPACITY—5
MOTOR—Four-cylinder vertical
CONTROL—Spark and throttle
HORSEPOWER—24 at 950 r. p. m.
VALVES—Opposite sides
COOLING—Radiator, pump and fan



IGNITION—Jump spark
CARBURETER—Special Schebler
LUBRICATION—Force feed
TRANSMISSION—Sliding gear, three speed
CLUTCH—Multiple disc
DRIVE—Shaft
WHEEL BASE—108½ in., Tread 56½ in.
BRAKES—Transmission-rear hubs

RAINIER COMPANY, NEW YORK

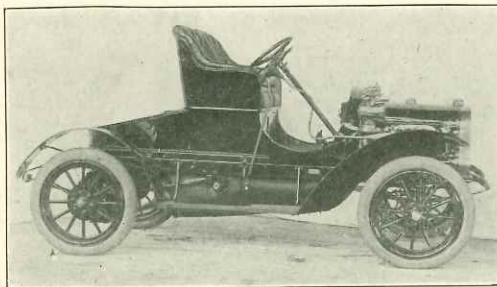
CAR—Rainier
MODEL—C, touring car
PRICE—\$4,250
WEIGHT—2,400 pounds
SEATING CAPACITY—7
MOTOR—Four-cylinder vertical
CONTROL—Spark and throttle
HORSEPOWER—30-35 at 1,150 r. p. m.
VALVES—Mechanical-interchangeable



COOLING—Radiator, pump and fan
IGNITION—Make and break-magneto
CARBURETER—Float feed
LUBRICATION—Lavigne oiler
TRANSMISSION—Sliding train
CLUTCH—Cone
DRIVE—Direct
WHEEL BASE—104 in., Tread 56 in.
BRAKES—Two internal expanding

THOMAS B. JEFFREY & CO., KENOSHA, WIS.

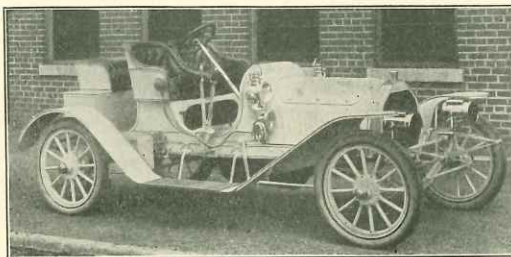
CAR—Rambler
MODEL—27, runabout
PRICE—\$950
WEIGHT—1,500 pounds
SEATING CAPACITY—2
MOTOR—Two-cylinder horizontal
CONTROL—Throttle and spark
HORSEPOWER—14-16 at 800 r. p. m.
VALVES—In heads-mechanical



COOLING—Radiator-special system
IGNITION—Jump spark
CARBURETER—Automatic special
LUBRICATION—Force feed
TRANSMISSION—Planetary-two speed
CLUTCH—Multiple disc
DRIVE—Single chain
WHEEL BASE—90 in., Tread 56 in.
BRAKES—Transmission-rear hubs

PREMIER MOTOR MFG. CO., INDIANAPOLIS, IND.

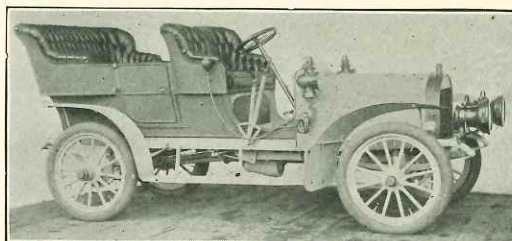
CAR—"Premier 24"
MODEL—24, runabout
PRICE—\$2,250
WEIGHT—1,900 pounds
SEATING CAPACITY—3
MOTOR—Four-cylinder vertical
CONTROL—Spark and throttle
HORSEPOWER—24 at 950 r. p. m.
VALVES—Opposite sides



COOLING—Radiator, pump and fan
IGNITION—Jump spark
CARBURETER—Special Schebler
LUBRICATION—Force feed
TRANSMISSION—Sliding gear, three speed
CLUTCH—Multiple disc
DRIVE—Shaft
WHEEL BASE—108¾ in., Tread 56½ in.
BRAKES—Transmission-rear hubs

PIERCE ENGINE CO. RACINE, WIS.

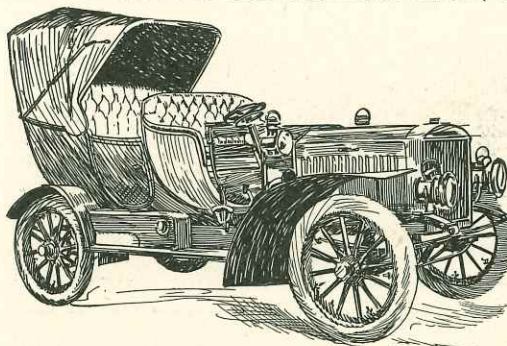
CAR—Pierce-Racine
 MODEL—D, touring car
 PRICE—\$2,600
 WEIGHT—2,700 pounds
 SEATING CAPACITY—7
 MOTOR—Four-cylinder vertical
 CONTROL—Spark and throttle
 HORSEPOWER—40 at 1,200 r. p. m.
 VALVES—Opposite-mechanical



COOLING—Radiator, pump and fan
 IGNITION—Jump spark
 CARBURETER—Automatic
 LUBRICATION—Force feed
 TRANSMISSION—Sliding gear
 CLUTCH—Fly-wheel-cone
 DRIVE—Shaft
 WHEEL BASE—106 in., Tread 56 in.
 BRAKES—Four on rear wheels

EVANSVILLE AUTOMOBILE CO., EVANSVILLE, IND.

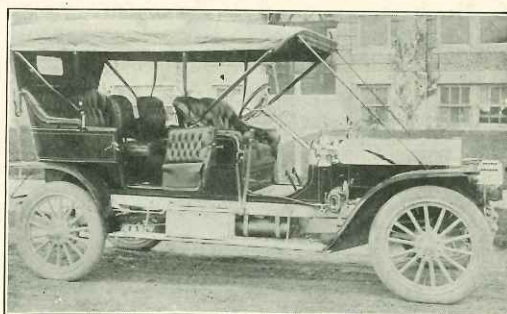
CAR—Simplicity
 MODEL—French type
 PRICE—\$3,000
 WEIGHT—2,500 pounds
 SEATING CAPACITY—5
 MOTOR—Four-cylinder vertical
 CONTROL—Side lever
 HORSEPOWER—40 at 1,000 r. p. m.
 VALVES—Mechanical



COOLING—Radiator, pump and fan
 IGNITION—Storage battery
 CARBURETER—Schebler
 LUBRICATION—Force feed-splash
 TRANSMISSION—Roller traction
 CLUTCH—By engaging friction
 DRIVE—Two side chains
 WHEEL BASE—105 in., Tread 56 in.
 BRAKES—Band

WELCH MOTOR CAR CO., DETROIT AND PONTIAC, MICH.

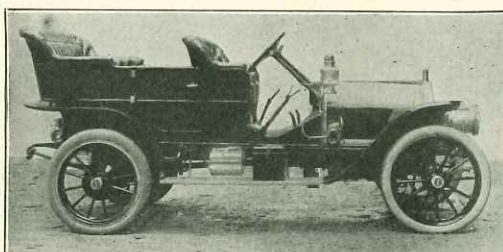
CAR—Welch
 MODEL—G, touring car
 PRICE—\$4,200
 WEIGHT—3,000 pounds
 SEATING CAPACITY—7
 MOTOR—Four-cylinder vertical
 CONTROL—Foot and hand throttle
 HORSEPOWER—50
 VALVES—Inverted-inclined
 COOLING—Radiator, pump and fan



IGNITION—Jump spark
 CARBURETER—Automatic
 LUBRICATION—Hammer feed oil-er
 TRANSMISSION—Selective, three speed
 CLUTCH—Multiple disc
 DRIVE—Bevel gear
 WHEEL BASE—129 in., Tread 56½ in.
 BRAKES—Expanding-rear hubs

WAYNE AUTOMOBILE CO., DETROIT, MICH.

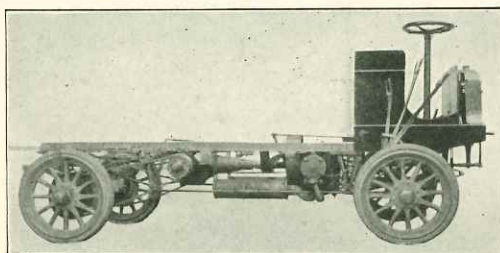
CAR—Wayne
 MODEL—N, touring car
 PRICE—\$2,500
 WEIGHT—2,400 pounds
 SEATING CAPACITY—5
 MOTOR—Four-cylinder vertical
 CONTROL—Throttle and spark
 HORSEPOWER—35 at 1,000 r. p. m.
 VALVES—Same side-mechanical
 COOLING—Radiator, pump and fan



IGNITION — Jump spark-storage battery
 CARBURETER—Schebler
 LUBRICATION—Force feed-splash
 TRANSMISSION — Sliding - rear axle-three speed
 CLUTCH—Internal expanding
 DRIVE—Bevel gear
 WHEEL BASE—106 in., Tread 56 in.
 BRAKES—Both on rear hubs

LOGAN CONSTRUCTION CO., CHILLICOTHE, O.

CAR—Logan
 MODEL—M, truck
 PRICE—\$2,500
 WEIGHT—3,100 pounds
 CARRYING CAPACITY—5,000
 MOTOR—Two-cylinder horizontal
 CONTROL—Spark and throttle
 HORSEPOWER—30 at 810 r. p. m.
 VALVES—Automatic inlet-mech. exhaust
 COOLING—Radiator, pump and fan



IGNITION—Storage battery-jump spark
 CARBURETER—Float feed type
 LUBRICATION — Force feed-mechanical
 TRANSMISSION—Sliding gear
 CLUTCH—Contracting band
 DRIVE—Side chains
 WHEEL BASE—108 in., Tread 56½ in.
 BRAKES—Four-contracting band

THE WHITE COMPANY, CLEVELAND, O.

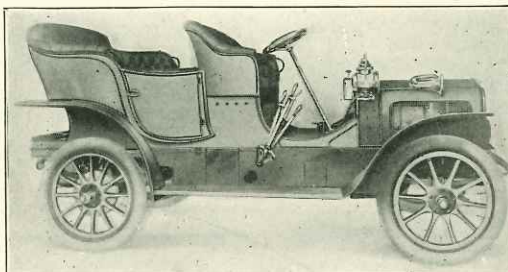
CAR—White Steamer
 MODEL—G, touring
 PRICE—\$3,500
 WEIGHT—Not given
 SEATING CAPACITY—5
 ENGINE—Two-cylinder compound vertical
 CONTROL—Throttle
 HORSEPOWER—30
 GENERATOR—Continuous tube type
 BURNER—Pilot light-increased capacity



VALVES—Stephenson link type
 CONDENSER—White, with fan
 FEED WATER HEATER—Coil in exhaust pipe
 PUMPS—Three water and one air
 LUBRICATION—Sight feed-mechanical
 WATER TANK—17 gal., under floor
 REGULATION—Diaphragm type, thermostat for fuel
 DRIVE—Direct shaft
 WHEEL BASE—115 in.
 BRAKES—Foot and hand, rear hubs

THE WHITE COMPANY, CLEVELAND, O.

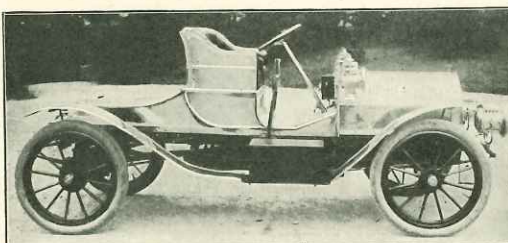
CAR—White Steamer
 MODEL—H, touring car
 PRICE—\$2,500
 WEIGHT—Not given
 SEATING CAPACITY—5
 ENGINE—Two-cylinder compound vertical
 CONTROL—Throttle
 HORSEPOWER—20
 GENERATOR—Continuous tube type
 BURNER—Pilot light-increased capacity
 VALVES—Stephenson link type



CONDENSER—White, with fan
 FEED WATER HEATER—Coil in exhaust pipe
 PUMPS—Three water and one air
 LUBRICATION—Sight feed, mechanical
 WATER TANK—17 gal., under floor
 REGULATION—Diaphragm type, thermostat for fuel
 DRIVE—Direct shaft
 WHEEL BASE—102 in.
 BRAKES—Foot and hand, rear hubs

DRAGON AUTOMOBILE CO., PHILADELPHIA, PA.

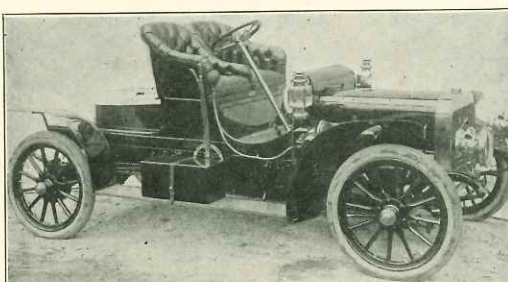
CAR—Dragon
 MODEL—Runabout
 PRICE—\$2,000
 WEIGHT—1,800 pounds
 SEATING CAPACITY—3
 MOTOR—Four-cylinder vertical
 CONTROL—Spark and throttle
 HORSEPOWER—24-26 at 1,200 r. p. m.
 VALVES—Opposite sides, mechanical



COOLING—Radiator and pump
 IGNITION—Jump spark
 CARBURETER—Holley
 LUBRICATION—Lavigne force feed
 TRANSMISSION—Sliding gear, three speed
 CLUTCH—Leather faced cone
 DRIVE—Shaft
 WHEEL BASE—104 in. Tread, 54 in.
 BRAKES—Four, rear hubs

JACKSON AUTOMOBILE CO., JACKSON, MICH.

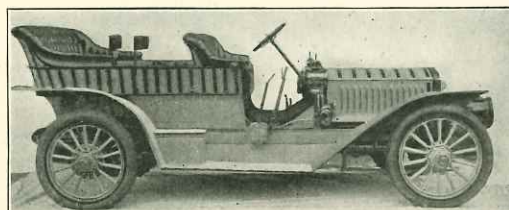
CAR—Jackson
 MODEL—D, runabout
 PRICE—\$1,500
 WEIGHT—1,500 pounds
 SEATING CAPACITY—2
 MOTOR—Two-cylinder horizontal
 CONTROL—Spark and throttle
 HORSEPOWER—20-24
 VALVES—In offset chamber, mechanical
 COOLING—Radiator, thermo-syphon



IGNITION—Jump spark-storage battery
 CARBURETER—Schebler
 LUBRICATION—Hill precision oiler
 TRANSMISSION—Planetary, two speed
 CLUTCH—Multiple disc
 DRIVE—Shaft-bevel gear
 WHEEL BASE—106 in. Tread, 56 in.
 BRAKES—Rear hubs

THE OSCAR LEAR AUTOMOBILE CO., COLUMBUS, O.

CAR—Frayer-Miller
 MODEL—1907 touring car
 PRICE—\$4,000
 WEIGHT—2,750 pounds
 SEATING CAPACITY—7
 MOTOR—Four-cylinder vertical
 CONTROL—Throttle and spark
 HORSEPOWER—50 at 1,100 r. p. m.
 VALVES—Horizontal-mechanical
 COOLING—Air blower, with conduits



IGNITION—Jump spark-magneto-battery
 CARBURETER—Special design
 LUBRICATION—Force feed on dash
 TRANSMISSION—Sliding gear, four speed
 CLUTCH—Internal expanding
 DRIVE—Direct shaft
 WHEEL BASE—122 in., Tread 56 in.
 BRAKES—Two on rear hubs

THE BIDDLE-MURRAY MFG. CO., OAK PARK ILL.

CAR—B-M truck
 MODEL—3-ton commercial vehicle
 PRICE—\$4,000
 WEIGHT—6,000 pounds
 CAPACITY—3 tons.
 MOTOR—Four-cylinder vertical
 CONTROL—On steering wheel
 HORSEPOWER—40-45 at 900 r. p. m.
 VALVES—Mechanical
 COOLING—RADIATOR, pump and fan

IGNITION—Jump spark
 CARBURETER—Murray special
 LUBRICATION—Mechanical
 TRANSMISSION—Selective, four speed
 CLUTCH—Multiple disc, in oil
 DRIVE—Chain
 WHEEL BASE—120 in. Tread, 56 in.
 BRAKES—Three sets, rear wheels and shaft

DIAMOND T MOTOR CAR CO., CHICAGO

CAR—Diamond T
 MODEL—B, touring car
 PRICE—\$2,500 complete
 WEIGHT—2,900 pounds
 SEATING CAPACITY—7
 MOTOR—Four-cylinder vertical
 CONTROL—Spark and throttle
 HORSEPOWER—40 at 1,000 r. p. m.
 VALVES—Same side; mechanical

COOLING—Radiator, pump and fan
 IGNITION—Jump spark; magneto battery
 CARBURETER—Automatic
 LUBRICATION—Force feed oiler
 TRANSMISSION—Sliding gear, three speed
 CLUTCH—Leather faced cone
 DRIVE—Shaft
 WHEEL BASE—124 in. Tread, 56 in.
 BRAKES—On rear hubs

MERCEDES IMPORT COMPANY, NEW YORK

CAR—Mercedes
 MODEL—1907, limousine
 PRICE—\$10,550
 WEIGHT—3,500 pounds
 SEATING CAPACITY—7
 MOTOR—Four-cylinder vertical
 CONTROL—Spark and throttle
 HORSEPOWER—35 at 1,200 r. p. m.
 VALVES—Opposite, mechanical

COOLING—Radiator, pump and fan
 IGNITION—Make and break, Bosch magneto
 CARBURETER—Mercedes water jacketed
 LUBRICATION—Mechanical
 TRANSMISSION—Selective
 CLUTCH—Spring
 DRIVE—Side chains
 WHEEL BASE—126 in. Tread, 52 in.
 BRAKES—Transmission, rear wheels

DORRIS MOTOR CAR CO., ST. LOUIS, MO.

CAR—Dorris
 MODEL—B, touring car
 PRICE—\$2,500
 WEIGHT—2,300 pounds
 SEATING CAPACITY—5
 MOTOR—Four-cylinder
 CONTROL—Spark and throttle
 HORSEPOWER—30 at 1,000 r. p. m.
 VALVES—In heads; mechanical
 COOLING—Radiator, pump and fan

IGNITION—Jump spark; storage battery; quad. coil
 CARBURETER—Breeze
 LUBRICATION—McCord Special
 TRANSMISSION—Progressive sliding gear, three speed
 CLUTCH—Multiple disc
 DRIVE—Bevel gear
 WHEEL BASE—102 in. Tread, 56 in.
 BRAKES—Three; rear hubs; transmission

DARRACQ MOTOR CAR CO., NEW YORK

CAR—Darracq
 MODEL—Touring car
 PRICE—\$7,200 chassis
 WEIGHT—3,400 pounds
 SEATING CAPACITY—5 to 7
 MOTOR—Four-cylinder vertical
 CONTROL—Spark and throttle
 HORSEPOWER—40-60
 VALVES—One side-mechanical
 COOLING—Radiator, pump and fan

IGNITION—Double system
 CARBURETER—Float feed
 LUBRICATION—Automatic force feed
 TRANSMISSION—Sliding type, three speed
 CLUTCH—Cone type
 DRIVE—Shaft
 WHEEL BASE—125 in. Tread 53 in.
 BRAKES—Shaft and rear wheels

THE KLINE COMPANY, CHICAGO

CAR—Napier six-cylinder
 MODEL—Touring car
 PRICE—\$8,000
 WEIGHT—3,300 pounds
 SEATING CAPACITY—7
 MOTOR—Six-cylinder vertical
 CONTROL—Spark, throttle, foot
 HORSEPOWER—60 at 1,800 r. p. m.
 VALVES—One side, mechanical
 COOLING—Radiator, pump and fan

IGNITION—Napier synchronized
 CARBURETER—Napier patent
 LUBRICATION—Automatic
 TRANSMISSION—Selective sliding, three speed
 CLUTCH—Cone, metal to metal
 DRIVE—Shaft
 WHEEL BASE—126 in. Tread, 56 in.
 BRAKES—Rear hubs, driving shaft

SMITH & MABLEY, INC., NEW YORK

CAR—Isotta Fraschini
 MODEL—1907, touring car
 PRICE—\$5,000 to \$10,000
 WEIGHT—1,870 pounds chassis
 SEATING CAPACITY—7
 MOTOR—Four-cylinder vertical
 CONTROL—Spark and throttle-foot
 HORSEPOWER—35 at 950 r. p. m.
 VALVES—Not given
 COOLING—Radiator, pump, fly-wheel fan

IGNITION—S-B high tension
 CARBURETER—Float feed, I. F. type
 LUBRICATION—Oiled under pressure
 TRANSMISSION—Sliding gear, selective
 CLUTCH—Special patent
 DRIVE—Double chains
 WHEEL BASE—118 in., Tread 54 in.
 BRAKES—Rear hubs-jack shaft-water cooled

THE KLINE COMPANY, CHICAGO

CAR—Napier
 MODEL—"Nike," type run-about
 PRICE—\$2,500
 WEIGHT—1,500 pounds
 SEATING CAPACITY—3
 MOTOR—Four-cylinder horizontal
 CONTROL—Spark, throttle, foot
 HORSEPOWER—18 at 1,500 r. p. m.
 VALVES—One side, mechanical
 COOLING—Radiator, pump and fan

IGNITION—Napier synchronized
 CARBURETER—Napier patent
 LUBRICATION—Automatic
 TRANSMISSION—Sliding gear, three speed
 CLUTCH—Cone, metal to metal
 DRIVE—Shaft
 WHEEL BASE—90 in. Tread, 56 in.
 BRAKES—Rear hubs, driving shaft

SMITH & MABLEY MFG. CO., NEW YORK

CAR—Simplex
 MODEL—1907, touring car
 PRICE—\$5,600
 WEIGHT—2,200 pounds
 SEATING CAPACITY—6
 MOTOR—Four-cylinder vertical
 CONTROL—Spark and throttle-foot
 HORSEPOWER—30-35 at 900 r. p. m.
 VALVES—Opposite sides
 COOLING—Radiator, pump and fan

IGNITION—Double-magneto battery
 CARBURETER—S. & M. Simplex type
 LUBRICATION—Pressure feed
 TRANSMISSION—Progressive sliding gear, four speed
 CLUTCH—Cone, leather faced
 DRIVE—Side chains
 WHEEL BASE—106 in., Tread 54 in.
 BRAKES—Rear wheels-differential

KNIGHT & KILBOURNE, CHICAGO

CAR—Silent Knight
 MODEL—C, touring
 PRICE—\$4,000
 WEIGHT—2,800 pounds
 SEATING CAPACITY—7
 MOTOR—Four-cycle, four-cylinder, valveless
 CONTROL—Spark and throttle
 HORSEPOWER—35-40 at 1,200 r. p. m.
 VALVES—None
 COOLING—Pump and radiator

IGNITION—Jump spark
 CARBURETER—Schebler special
 LUBRICATION—Force feed, spray
 TRANSMISSION—Selective type
 CLUTCH—Leather faced cone
 DRIVE—Shaft
 WHEEL BASE—112 in. Tread, 56 in.
 BRAKES—Expanding, contracting; rear hubs

What Accessories Exhibitors Will Have at the Show

Acetyvone Co., Niagara Falls, N. Y.—Lamps, generators and carbide.

Adapt Machinery Co., Chicago—Wind shields, tire holders, mechanical oilers, chain tools, bumpers.

Ajax-Grieb Rubber Co., Trenton, N. J.—Tires.

Alvin, F. J.—Chicago—Black-Hawk dry batteries, ammeters and battery connectors; Water shock relievers and mufflers; Sintz timers and rotary pumps; No-Ko-Rode.

American Electric Novelty & Mfg. Co., New York—Batteries, speed indicators, tire tubes, automatic starters, vulcanizers.

Appliance Manufacturing Co., Chicago—Appliances.

Armac Motor Co., Chicago—Armac motor cycles.

Arnstein, Eugene, Chicago—All kinds of supplies and accessories for the manufacturer, dealer, repair-man and user.

Atwater-Kent Mfg. Co., Philadelphia, Pa.—Battery testers, spark generators, pocket meters, ignition devices.

Auto Accessories Mfg. Co., Detroit, Mich.—Lamps, horns, spark plugs, tops, wind shields and supplies.

The Automobile Supply Co., Chicago—All kinds of supplies and accessories for the manufacturer, dealer, repair man and user.

Avery Portable Lighting Co., Milwaukee, Wis.—Tanks containing lighting gas, pressure gages.

Badger Brass Mfg. Co., Kenosha, Wis.—Solar acetylene, kerosene lamps and gas generators.

Baldwin Chain & Mfg. Co., Worcester, Mass.—Baldwin chains, spring recoil checks, tire holders.

Beckley Ralston Co., Chicago—All kinds of supplies and accessories for the use of the manufacturer, dealer, repair man and user.

Bemus, T. Alton, Boston, Mass.—Timers, distributors, spark coils and plugs.

Bowser & Co., Inc., S. F., Ft. Wayne, Ind.—Bowser gasoline and oil tanks.

Brown-Lipe Gear Co., Syracuse, N. Y.—Steering wheels and gears, differentials, sliding gears.

Byrne, Kingston & Co., Kokomo, Ind.—Kingston carbureters, coils, mufflers, switches and other parts.

Chicago Battery Co., Chicago—Duro batteries, lamps and coils, motor boat annunciators and CECO timers.

Chicago School of Motoring, Chicago—

Consolidated Mfg. Co., Toledo, O.—Yale-California motor cycles.

Continental Caoutchouc Tire Co., New York—Continental tires.

Cook's Railway Appliance Co., Kalamazoo, Mich.—Automobile jacks.

Cramp & Sons, Wm., Ship & Engine Bldg. Co., Philadelphia, Pa., Parsons manganese bronze and white brass.

Cullman Wheel Co., Chicago—Differentials, sprockets, chains.

Chicago Pneumatic Tool Co., Chicago—Electric tools and appliances.

Dayton Electrical Mfg. Co., Dayton, O.—Apple dynamo storage battery ignition system, Apple battery charger, Apple generator, Apple adjustable automatic friction governor.

Detroit Lubricator Co., Detroit, Mich.—Lubricators.

Detroit Motor Car Supply Co., Detroit, Mich.—Bodies, tops, wind shields.

Diamond Chain & Mfg. Co., Indianapolis, Ind.—Diamond chains.

Diamond Rubber Co., Akron, O.—Diamond tires.

Dietz Co., R. E., New York—Acetylene and kerosene, head and side lamps, generators.

Diezemann Shock Absorber Co., Hoboken, N. J.—Diezemann shock absorbers.

Direct Drive Axle Co., Columbus, O.—Transmissions.

Dixon Crucible Co., Joseph, Chicago—Crucibles and graphite.

Dow Tire Co., Chicago—Tires.

Edmunds & Jones Mfg. Co., Detroit, Mich.—E. & J. lamps.

Electric Rubber Mfg. Co., Rutherford, N. J.—Panther tires.

Electric Storage Battery Co., Philadelphia, Pa.—Batteries and sparking coils.

Excelsior Supply Co., Chicago—All kinds of supplies and accessories for the use of the manufacturer, dealer, repair man and user.

Firestone Tire & Rubber Co., Akron, O.—Firestone tires.

Fisk Rubber Co., Chicopee Falls, Mass.—Fisk tires.

Franco-American Auto & Supply Co., Chicago—All kinds of supplies and accessories for the use of manufacturer, dealer, repair man and user.

G & J Tire Co., Indianapolis, Ind.—G & J tires.

Gabriel Horn Mfg. Co., Cleveland, O.—Gabriel horns and Foster shock brakes.

Gemmer Engine Co., Wabash, Ind.—Gemmer adjustable steering gear.

Goodrich Co., B. F., Akron, O.—Goodrich tires.

Goodyear Tire & Rubber Co., Akron, O.—Goodyear tires.

Gray-Hawley Mfg. Co., Detroit, Mich.—Gray auto-chimes and mufflers.

Gray & Davis, Amesbury, Mass.—Gray & Davis lamps and generators.

Hancock Mfg. Co., Chicago—Hancock oilers.

Harburg Tire Co., New York—Harburg tires.

Harris Oil Co., A. W. Providence, R. I.—Harris oils.

Hartford Auto Parts Co., Hartford, Conn.—Hartford joints.

Hartford Rubber Works, Hartford, Conn.—Hartford and Dunlop tires and universal rims.

Hartford Suspension Co., New York—Truffault-Hartford shock absorbers.

Hendee Mfg. Co., Springfield, Mass.—Indian motor cycles, tricars and vans.

Hess-Bright Mfg. Co., Philadelphia, Pa.—Hess-Bright ball bearings.

Hine-Watt Mfg. Co., Chicago—Columbia lamps and generators.

Horseless Age, New York—Automobile trade journal.

Hotchkin, P. M. Chicago—Hotchkin shock absorbers.

Hyatt Roller Bearing Co., Harrison, N. J.—Hyatt roller bearings.

Imperial Brass Mfg. Co., Chicago—Pumps, spark plugs, jacks, automatic gasoline controls.

International Rubber Co., Milltown, N. J.—International tires.

Janson, C. A., Chicago—Janson variable transmission.

Jones, J. W., New York—Jones speedometer.

Jones, W. S., Philadelphia, Pa.—Boss filter.

Kilgore Air Cushion Co., Chicago—Kilgore pneumatic shock absorbers.

Kimball Tire Case Co., Council Bluffs, Ia.—Tire cases.

Kinsey Mfg. Co., Dayton, O.—Kinwood pressed steel frames, mechanical oilers, mufflers, gasoline tanks, fenders, radiators, hoods and fittings.

Limousine Carriage Mfg. Co., Chicago—Wind shields, bodies and tops.

Lipman Mfg. Co., Beloit, Wis.—Lipman electric speed indicators, odometers, rotary pumps.

London Auto Supply Co., Chicago—Folding glass fronts, tops.

Long Mfg. Co., Chicago—Long spiral tube radiators, fenders, metal dashes, hoods.

McCanna, J. F. & Edward Neely, Chicago—Mechanical force feed oiler and self cleaning spark plugs.

McCord & Co., Chicago—McCord force feed lubricators, carbureters, circulating pumps.

Midgley Mfg. Co., Columbus, O.—Midgley pressed steel parts.

Morgan & Wright, Detroit, Mich.—Morgan & Wright tires.

Morrison, McIntosh & Co., Grinnell, Ia.—Automobile gloves.

Motor Age, Chicago—Automobile trade journal.

Motor Car Equipment Co., New York—All kinds of parts and accessories for the manufacturer, dealer, repairman and user.

Motor Way, Chicago—Automobile trade journal.

Motsinger Device Mfg. Co., Pendleton, Ind.—Motsinger automobile sparkers.

Motz Clincher Tire & Rubber Co., Akron, O.—Motz tires.

Metal Stamping Co., New York—Radiators.

Muncie Automobile Parts Co., Muncie, Ind.—Transmission, gears and other automobile parts.

National Battery Co., Buffalo, N. Y.—Batteries.

National Carbon Co., Cleveland, O.—Dry cells.

National Oil Pump & Tank Co., Dayton, O.—Gasoline tanks, stationery pumps.

National Sales Corporation, New York—Selling agents for the Peugeot chains, the Gaither-Owen carbureter, the P. D. Q. tire repair plugs, the Connecticut coils, Royal storage batteries, the Mezger soot-proof spark plugs.

Never-Miss Spark Plug Co., Lansing, Mich.—The Never-Miss spark plugs, coils, ammeters, chain tools, battery connectors.

Niagara Rubber Co., Lockport, N. Y.—Niagara tires.

North Chicago Machine Co., North Chicago, Ill.—The Palmbia hydraulic oil clutch.

N. Y. & N. J. Lubricator Co., New York—Oils.

Oliver Instrument Co., Minneapolis, Minn.—The Index speed indicator.

Oliver Mfg. Co., Chicago—The Peerless, New Samson caps and E-Z jacks.

Pantasote Co., Chicago—Pantasote leather.

Parsons Buggy Top Co., Chicago—Tops and bodies.

Pennsylvania Rubber Co., Jeannette, Pa.—Pennsylvania tires.

Post & Lester, Hartford, Conn.—All kinds of parts and accessories for the manufacturer, dealer, repair man and user.

Prest-o-lite Co., Indianapolis, Ind.—Prest-o-lite gas tanks.

Prosser & Son, Thomas, New York—Krupp chrome nickel steel.

Puncture Proof Tire Co., Cleveland, O.—Puncture-proof tire casings.

Rands Manufacturing Co., Detroit, Mich.—Tops, storm fronts, lamp brackets, tire holders, foot rests.

Remy Electric Co., Anderson, Ind.—Remy ignition systems.

Republic Rubber Co., Youngstown, O.—Republic tires.

Rose Manufacturing Co., Philadelphia, Pa.—Neverout lamps and generators.

Robinson & Son Co., W. C., Philadelphia, Pa.—Oils and greases.

Rushmore Dynamo Works, Plainfield, N. J.—Rushmore lamps and generators.

Sager, J. H., Rochester, N. Y.—Sager equalizing springs.

Shaler, C. A., Waupun, Wis.—Shaler electric vulcanizer.

Shelby Steel Tube Co., Shelby, O.—Tubing.

Smith Manufacturing Co., R. H., Springfield, Mass.—Speedometers, motometers.

Spicer Universal Joint Mfg. Co., Plainfield, N. J.—Universal joints.

Splitdorf, C. F., New York—Splitdorf ignition apparatus, high and low-tension magnetos, ball bearing commutators, coils, switches, high and low-tension cables.

Sprague Umbrella Co., Norwalk, O.—Tops, fronts, auto bows.

Steel Ball Co., Chicago—Hill precision oiler.

Standard Lamp & Mfg. Co., Chicago—Lamps and generators.

Standard Varnish Works, Chicago—Varnishes.

Stewart & Clark Mfg. Co., Chicago—Stewart speedometers and mileage recorder.

Swinehart Clincher Tire & Rubber Co., Akron, O.—Swinehart tires.

Timken Roller Bearing Co., Canton, O.—Roller bearings, axles, steering knuckles.

Turner Brass Works, Chicago—Harroun automobile bumpers, Ross fluid level indicator, Martin reserve and alarm valves, Turner carbureter, castings, nameplates.

Turner & Fish Company, Chicago—Steel wheels.

Veeder Manufacturing Co., Hartford, Conn.—Odometers, tachometers.

Vesta Accumulator Co., Chicago—Vesta storage batteries.

Warner Clutch Co., Chicago—Warner automatic clutch.

Warner Gear Co., Muncie, Ind.—Differential gears, steering apparatus, transmission gears.

Warner Instrument Co., Beloit, Wis.—Auto-meters, anemometers.

Weed Chain Tire Grip Co., New York—Tire chains.

Western Malleable Steel Co., Detroit, Mich.—Malleable castings and forgings.

Wheeler, F. H., Detroit, Mich.—Schebler carbureters.

Whitely Steel Co., Muncie, Ind.—Crown steel castings.

Whitney Manufacturing Co., Hartford, Conn.—Chains.

Willis Co., E. J., New York—All kinds of parts and accessories for the manufacturer, dealer, repair man and user.

Winchester Speedometer Co., New York—Winchester speedometers.

Witherbee Ignitor Co., New York—Witherbee storage battery ignitors.

Wray Pump & Register Co., Rochester, N. Y.—Kellogg, Jr., pumps, National pressure register, Wray compound pump with gage, brass, bronze and aluminum castings.

"Liberalizing" the Free Alcohol Law

By HARRY W. PERRY

The manufacturers and farmers who expected to be most benefited by the law removing the internal revenue tax from ethyl alcohol, which became effective January 1, 1907, quickly came to the conclusion that, in the vernacular of the period, they had been "handed a lemon" when they read the regulations issued in October by the Commissioner of Internal Revenue to control the denaturing and sale of alcohol. Passage of the so-called "free alcohol" act, which was approved June 7, 1906, had been obtained finally under pressure brought to bear by the agriculturists and the manufacturers, the former advocating the measure under the impression that removal of the tax would so stimulate the demand for denatured alcohol that they would be able profitably to convert the waste products of the farm into alcohol in private stills on the premises, while manufacturers contemplated a plentiful supply of cheap liquid fuel that could be used for power, heat and lighting purposes. Builders of internal combustion motors in particular anticipated an early release from the increasing charges for gasoline, alleged to be due to inability to distill enough of the lighter grades of oil from the available supply of petroleum to meet the growing demand.

How great has been the disappointment of all, may be surmised from the fact that a careful reading of the voluminous bulletin of regulations shows that the process of denaturing alcohol is so hedged about by restrictions as practically to prohibit the production of the fluid except by large distilleries, while the proportion of expensive denaturant required was so great as to put the price of the resultant product where it could not compete with petroleum products as a fuel.

Whether true or not, reasoning from effect to cause, it was open to suspicion that the interests of the whisky and oil trusts had been sedulously conserved, and it didn't take long for certain "constituents" to make their suspicions known. One direct and quick result has been the issuing of a supplementary circular late in December by the Commissioner of Internal Revenue, amending the regulations by reducing the proportion of methyl or wood alcohol required as a denaturing agent for each 100 gallons of ethyl or grain alcohol from 10 gallons to 2 gallons. For a clearer understanding and in order that the great difference in prices of the resulting products may be quickly realized, the definitions of denaturing agents as contained in the original "Regulations No. 30," of September 29, 1906, and the Department circular of last month amending the former, are here reprinted consecutively.

Completely Denatured Alcohol.

Sec. 26. Unless otherwise specially provided, the agents used for denaturing alcohol withdrawn from bond for denaturing purposes shall consist of methyl alcohol and benzine in the following proportions: To every hundred parts by volume of ethyl alcohol of the desired proof (not less than 180 deg.) there shall be added ten parts by volume of approved methyl alcohol and one-half of one part by volume of approved benzine. For example, to every 100 gallons of ethyl alcohol (of not less than

180 deg. proof) there shall be added 10 gallons of approved methyl alcohol and $\frac{1}{2}$ gallon of approved benzine. Alcohol thus denatured shall be classed as completely denatured alcohol.

Methyl alcohol and benzine intended for use as denaturants must be submitted for chemical test and must conform to the specifications which shall be hereafter duly prescribed.

Amendment Modifying Denaturant.

Section 26 of the regulations and instructions concerning denatured alcohol, issued September 29, 1906, is amended by inserting after the words "approved benzine" in the ninth line of said section, the following:

"Or methyl alcohol and approved pyridin bases, in the following proportions: To every 100 parts by volume of ethyl alcohol of the desired proof (not less than 180 deg.) there shall be added two parts by volume of approved methyl alcohol and one-half of one part by volume of approved pyridin bases—for example, to every 100 gallons of ethyl alcohol (of not less than 180 deg. proof) there shall be added 2 gallons of approved methyl alcohol and $\frac{1}{2}$ gallon of approved pyridin bases."

Note.—Methyl alcohol intended for use as a denaturant must conform to the specifications prescribed in Circular No. 680.

Then follows a list of seven specifications to which the pyridin bases must conform, as to color, reaction with cadmium chloride, behavior with Nessler's reagent, boiling point, miscibility (ability to mix) with water, content of water, and alkalinity.

Although the exact cost of the pyridin bases is not immediately available for the purposes of this article, the reduction in the cost of producing denatured alcohol seems likely to be very considerable under the recent amendment, as the methyl, or wood alcohol required costs 60 cents a gallon. The reduction of 8 gallons in this item to every 100 gallons of ethyl alcohol means a decrease of approximately \$4.50 in every 100 gallons of the new fuel. More than this, wood alcohol has a strong tendency to rust steel, so that, if used in large quantities, it would quickly injure the cylinders of a motor. The wood alcohol furthermore contains a large proportion of water and reduces the number of heat units in every gallon of the denatured spirit, thereby impairing the efficiency of the engine.

The effect upon the farmers of the issuance of Regulations No. 30 by the Commissioner of Internal Revenue is made manifest by the introduction in the Senate by Senator Hansbrough of North Dakota, on December 20, of a bill to amend the "free alcohol" law by providing that the Commissioner of Internal Revenue shall arrange for the proper denaturing of any alcohol of the required proof that is distilled (presumably by anyone), the rules for denaturing to be prescribed by the commissioner and approved by the secretary of the treasury. The purpose of the Hansbrough bill is to liberalize the law and regulations in such a way that small stills can be operated on the farms with convenience and economy, enabling the farmer to use small gas engines for operating his machinery and heating and lighting his buildings with spirits distilled from corn stalks, partially decayed fruits and vegetables and similar waste material.

It requires only pointing out some of the restrictions

imposed by the "Regulations and Instructions Concerning Denatured Alcohol" to show how very necessary such an amendment is to the popularizing of the "free alcohol" law. For example, the very first requirement of the regulations is that the distiller wishing to denature alcohol of 180 deg., proof contained under bond in his "distillery warehouse" must, at his own expense, provide a denaturing bonded warehouse, to be situated on and constituting a part of the distillery premises. This warehouse must be built to specifications stated and be approved by the commissioner. Closed mixing tanks must be provided inside, each numbered and labeled and hav-

ing the capacity marked on the outside. It is also required that office accommodation shall be provided for an officer of the Internal Revenue service, who shall have custody of the keys of the warehouse. In this warehouse there must be a "denaturing material room" constructed of brick, stone, or tongue and groove planks, with windows barred and provided with solid shutters.

At least two sets of tanks for storing denaturing material must be provided, each set being of sufficient capacity in the aggregate to hold the material it is estimated the distiller will use for thirty days.

Building and Preserving the Roads

By FRANK N. HOYT

One doesn't have to go outside the limits of the elevated loop in Chicago, to collect material for an article on good, or rather bad roads, but there is a wide difference in the handling of the busy city streets and that of the ordinary country or suburban roads.

In the laying out of a street in a city, care is supposed to be taken to lay out with some idea for the future, and the engineer is brought into service in making a reduction in the grade or straightening the line and in making each new street fit, so to speak its surroundings. So the matter of paving usually comes quickly, pushed by the rapid advance in real estate, while the repairs which are very soon needed come more slowly and the pavement is soon going from bad to worse.

Not so is the treatment of the road lying outside the city.

A house was built and stood alone for many years with its nearest neighbor a mile and a half away, with many hills, swales and wooded stretches between. One neighbor in going to the other, would allow the faithful old family horse to almost pick its own way, winding in and out through the trees and taking a little more level stretch down a slight incline, although it added a little to the distance, rather than to go over the elevation.

This road in time became very much traveled, the course remaining the same, large boulders which were there at the start are still in the right of way as a monument to the man who was first to use it.

This is where the greatest good has and can be done in improving our roads, making it profitable to the farmer, with the loaded wagons of produce coming to market, also convenient and pleasant for driving or motoring. The only one other drawback to the comfort of the traveling public is the awful dust nuisance, this not only adds very much to the discomfort of those using the highway for pleasure but disfiguring the beauty of the foliage along its borders, and detrimental to the value of the crops in the fields.

The improvements of these roads, in doing away with the bad features, enhances the value of the farm, making it easy for the owner to cut up his land and dispose of it at will, at a price far in advance of that to be realized before the improvement began. A great advance in this respect has been made in my own native state Connecticut, in the last twelve years, or since the inauguration of the good roads movement there, and much credit is due the highway commissioner, James H. Macdonald, for his efforts along this one line of doing the most good for the least amount of

money among the poorer towns of the state on their main or through highways.

A very bad plan is in allowing the loose stone to collect on a macadamized road for the horse to kick into the gutter and help choke the flow of water when the rain comes and particles gather and are held by this little stone until enough debris has formed to cause a dam and the water to flow over the road and form a rut and even at times resulting in a washout.

An essential help for better roads is to keep the gutters and ditches clean and the loose stone off the road. They are not only kicked into the gutter but are imbedded into the road by the wheel and kicked out again by the hoof only to leave a break in the pavement which is made larger by each horse as he travels over it and aided by the water standing in these holes.

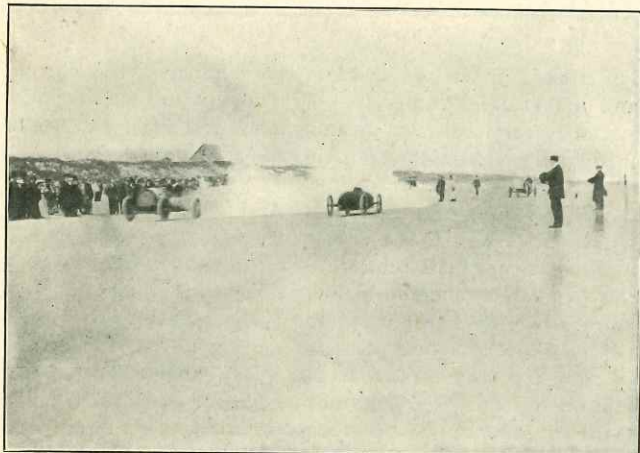
Repair these stone roads early, do not wait until they are entirely worn out with deep ruts and toe marks, but start as the stones begin to show bare, by spreading over the surface chips or stone from one-half to three-quarters of an inch longest diameter to a depth of about three-quarters of an inch. Use no roller and no sprinkling but spread uniformly using ordinary traffic to crush and produce the required surface.

The pounding of the hoof and crushing of the wheel will result in making a fine dust, which will settle down below the course applied on the old surface, and being protected from the wind and sun it is held in place finally furnishing a good hard and smooth surface as a protection to the road. As to the best way of getting rid of the nuisance, dust, which forms on the surface, at the least expense in the writer's opinion is in the use of the newly invented article to be sprinkled on the road, by the means of an ordinary water cart is Westrumite, which has demonstrated its great value in this respect in many instances. It does away with the continued application of water, only to have the road become dusty again in a few hours. Westrumite is sprinkled on the road at extended intervals with most satisfying results.

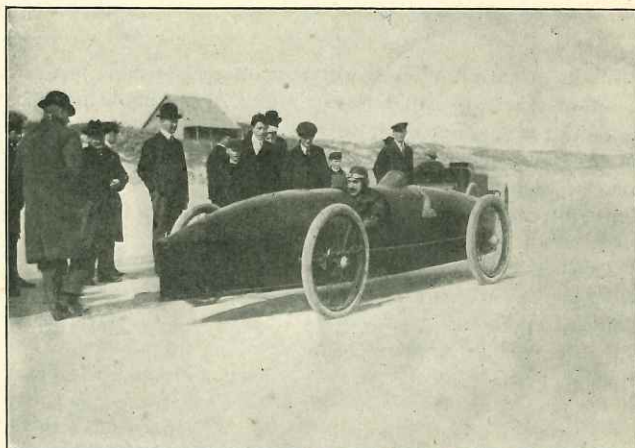
Each person driving over a road, no matter in what sort of a vehicle, should make himself an agent to promote good roads, by not driving in the same track of the persons before him, but distribute the travel, thereby preventing ruts which are great destroyers of roads.

This advice followed by the users of wide tires would not only greatly preserve the stone roads, but help to make good many poor dirt ones.

The Races on the Ormond-Daytona Beach



Start of the Ten-Mile Event.



The Stanley "Bug."

The Ormond meet of 1907 did not prove a successful one, although it is represented that Senator W. J. Morgan worked harder than ever before to make it the most successful ever held.

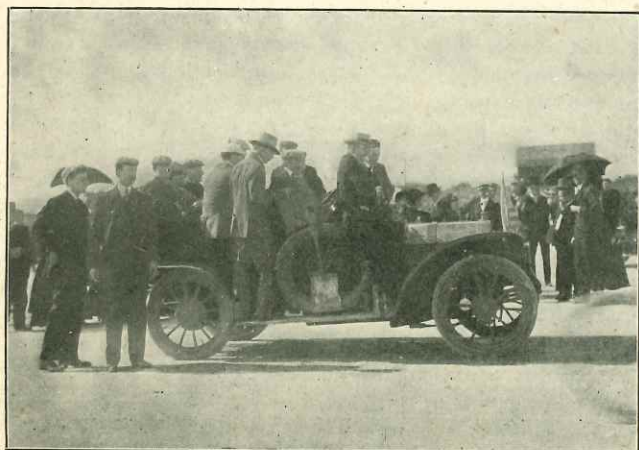
The first day's events were run off in the morning, under perfect weather conditions. These, apparently aroused as much enthusiasm as the events of a year ago, despite the fact that big foreign cars were scarce. The first event, a 5-mile free-for-all, was won by an American Mercedes in 4 minutes and 23 seconds. The second event was won by a Stanley steamer in 3 minutes and 4-5 seconds for the 5 miles. The third event was a special 5-mile match between the American Mercedes and the Stanley steamer, E. B. Blakely driving the former car and H. E. Rogers the latter. The steamer won the race by a large margin, its time being 3 minutes and 51 3-5 seconds. The 1-mile touring car race for mile-a-minute machines had three starters. This, like the preceding event, went to a steamer that was driven by Frank Durbin, the time for the mile being 53 seconds. The 1/4-mile event for touring cars, which followed, was run under conditions that the

machines be on the high gear, with non-operation of clutch or pedal. This race was won by W. A. Adriance in a Stevens-Duryea, with Walter Baker in a Peerless second and Ralph Owen's Oldsmobile third. Time, 1 minute and 13 seconds. The final was a special match for 1 mile between four of the men who had touring cars at Ormond. This race was won by Ralph R. Owen's Oldsmobile, with Kull's Wayne second.

The race for 20-mile touring cars for the International World's Championship was won by a Rolls-Royce in 23 minutes and 3 seconds. Motor car was a six-cylinder.

On Tuesday, the first event was a 20-mile race for American touring cars, all classes, the first three to finish being eligible to represent the United States in the International Loving Cup Championship, to be run later in the day. The course was up the beach from Ormond, a distance of 10 miles and return, the turning point being 4 miles beyond the club house at Daytona. This race was won by the Welch car, the time being 22:32.

The Stanley "Bug," driven by Fred Marriott, was completely wrecked in the ten mile event.



The Oldsmobile Path-Finder.



All that was left of the "Bug."

Automobile Engineering and the Allied Arts

By W. P. STEPHENS.

While the direct influence of the automobile and its value in almost every line of human activity is meeting with more general recognition each year, but little thought is given to the indirect influences of the new power. These are many and far-reaching, but a single one will serve as evidence of the debt due to Daimler, Panhard and the other pioneers of the motor car.

There is, probably, no other invention which has in so short a time exerted such a powerful influence upon mechanical engineering and its allied arts and sciences or interested such a number of experts in its service. The nearest, perhaps, is the electric trolley system in the years of its first rapid development, but this involved quantity rather than quality of work. The automobile industry, on the other hand, has called upon all branches of engineering—mechanical, electrical and metallurgical—to surpass at a moment's notice the highest point of achievement reached by long years of growth.

This spoiled child of the twentieth century was certainly born with a silver spoon in its mouth when compared with the other great inventions which preceded it. The designers of the first steam engines had at hand nothing with which to carry out their ideas. The engineering facilities of the day offered no materials but castings and forgings of the smallest size, and the hand tools then in use were inadequate for the machining of any large masses of metal. Development of the steam engine was retarded by the necessity for the advance of all lines of engineering; in the same way the later development of the compound marine engine for ocean service was possible only after radical improvements in the production of iron and steel and in the size and accuracy of machine tools. Railroad building in turn suffered for years from the lack of material and machinery for the production of the rolled T rail now in universal use.

The automobile came into being under far different auspices. Even in their experimental work its inventors had at hand a wide range of modern materials, the finest and toughest grades of cast iron, the purest of wrought iron and the toughest and strongest of steels and bronzes. The foundries and machine shops of every great city were capable of handling work of any size, while such highly developed lines of mechanical art as the manufacture of sewing machines, fire arms, printing presses and typewriters had produced special tools of extreme accuracy with men capable of handling them.

In view of the highly advanced state of mechanical engineering in all its branches a dozen years ago, it would seem that the automobile builder might have been satisfied with facilities so far in advance of those enjoyed by all earlier inventors, but such has not been the case; year by year his demands have become more insistent for finer materials and better tools. Continued predominance of the Continental makers has been due largely to the material at their command—the finest grades of cast iron and the most advanced foundry methods for the production of light but strong cylinders, improved methods of work-

ing aluminum for crank-cases and similar parts, chrome and nickel steel for crank-shafts and axles, with special machines and tools for forming and finishing; and so on through every detail of engine, chassis, wheels, body and fittings.

While for several years the American industry rested within the lines of the best general engineering practice, it now has taken the master hand and is rapidly forcing the extension of all branches of metallurgy and machine work. One by one the leading makers have awakened to the fact that the best the open market offered in the way of materials and tools was not good enough for the perfection of the American motor car; demands have been made for finer materials, and laboratories have been fitted up in the different shops for the testing of all materials, the first result being the rejection of a very large percentage as falling below the specifications. As the process continued the materials improved and at the same time the specifications were made more stringent and the testing more thorough, to the ultimate advantage of both steel-maker and the motor car manufacturer. As the need for this line of work became evident, plans were made for carrying it out on a large scale, the Association of Licensed Automobile Manufacturers taking up the task. At the present time the designers and engineers of the firms composing the association are working in harmony in the preparation of standard specifications for materials, all to be tested in the association laboratory—the standardization of a large number of parts that can be used in common by the different makers, and in many similar lines.

As examples of the direct influence of the motor car in the improvement of established lines of engineering work, and the initiation of new methods and processes, may be mentioned the following:

The modern system of drawing steel tubing of every variety of size and section originated in the demands of the bicycle manufacturers, but its advancement to the present stage is due largely to the automobile; similarly, the ball bearing was perfected to a certain point by the demand of the bicycle trade, but the automobile requirements have developed it into a most important adjunct of modern engineering, the great increase of size and the improvement in manufacture fitting it for uses never contemplated on its introduction. The making of ball bearings is now a distinct industry, with its special supply of materials and highly perfected machines for grinding and testing.

The process of drop-forging, carried out very extensively but on a small scale in the days of the bicycle, has today assumed enormous proportions, the sizes of the work being greatly increased and the quality improved. The present status of the general process of pressing and stamping complete shapes from steel, for axles, crank-shafts, connecting rods, frame members, with the large line of special tools necessary for the work, is the direct result of the demands of the automobile makers.

Ignition Systems at the Garden Show

By P. J. DASEY

The ignition systems used on cars exhibited at Madison Square Garden, show the same general tendency toward the adoption of mechanical generators for ignition current supply by the manufacturers of licensed cars as was found at the Palace show held the first week in December, the only difference between the two shows being that a greater percentage of the licensed cars was fitted with mechanical generators than was the case at the Palace show.

There was a greater uniformity of construction noted at the last show, possibly because the manufacturers there were older at the business, with but few exceptions, than most of those showing at the Palace, but it cannot be said, as yet, that any set standard has been adopted. The nearest approach to a standard is the make and break, or low tension system, with magneto generator, found on a large number of foreign cars, and as the home makers are usually prone to adopt a good thing, after the experimental work has been done by others, especially when it has been carried out by leading foreign makers and adopted by them, it is safe to assume that the near future will find a large increase in the number of American cars fitted with that system.

So far the advancement made has been principally to get a reliable system of ignition, that being of vital importance, and after that problem has been settled to the satisfaction of the great majority, it is probable the other features above mentioned will be taken up and worked out to a successful conclusion. The equipment of the American cars exhibited follows:

APPERSON—Four cars, each fitted with low tension magneto, single coil, non-vibrator, to distributor, thence to one set of plugs; quad coils, timer, etc., to another set of plugs.
AUTOCAR—Four cars, each fitted with timer, multiple coils, one set of dry and one of storage batteries.
BUICK—Six cars, each with timer, multiple coils and one set each of dry and storage batteries.
COLUMBIA—Three cars, each with make and break ignition and low tension magneto. One car with two storage batteries, one coil, distributor, etc., to plugs.
CADILLAC—Five touring cars, each fitted with two sets of storage batteries, timers, multiple coils, etc. Three runabouts, each equipped with two sets of dry cells, coil, timer, etc.
ELMORE—Four cars, each with one set of dry and one of storage batteries, multiple coils, timers, etc.
FRANKLIN—Five cars, with two sets of dry cells, timers, multiple coils, etc. One car with two sets of storage batteries, and balance of equipment same as above. One truck, with two sets of dry cells, multiple coils, timer, etc.
HAYNES—Five cars, each with one storage and one dry battery, multiple coils, timer, etc.
HEWITT—Two runabouts, with low tension magneto and single coil (single cylinder engine) to plug; also one storage battery to same coil and plug. One eight-cylinder car with same equipment, except that a distributor is used for the eight cylinders. Three trucks, with make and break spark and low tension magneto; also one storage battery, coils, timer, plugs, etc.
KNOX—Three cars, with two storage batteries, multiple coils, timers, etc. Two cars, with low tension magnetos, single non-vibrating coils, distributors, plugs, etc.; also one storage battery on each car, through the same coil, timer and distributor to the same plugs. One truck with same equipment as last above mentioned except that dry cells are used instead of storage battery. Two trucks, each with two sets of dry cells, multiple coils, timers, etc.
LOCOMOBILE—Six cars, each with make and break ignition and low tension magneto.
LOZIER—Five cars, each fitted with two systems of jump spark ignition. One set of plugs operated by high tension, self-contained, magneto. Another set of plugs operated by one storage battery and a single coil, distributor, etc.
MATHESON—Four cars, all fitted with make and break and low tension magneto.

NORTHERN—Three cars, each with multiple coils, one storage battery, etc.
OLDS—Four cars, each with multiple coils, timer, one storage battery, etc.
ORIENT—Three cars, each fitted with one storage and one dry battery, multiple coils, timer, etc. Three buckboards, each with two sets of dry cells, coil, timer, etc.
PACKARD—Four cars, each fitted with low tension, single non-vibrating coil, distributor, etc.; also one storage battery, to single vibrator coil, through same distributor on magneto to same set of plugs.
PEERLESS—Six cars, each with multiple coils, timers, two sets of storage batteries, timer, etc.
PIERCE—Five cars, each with two separate sets of jump spark ignition. One formed of high tension, self-contained, magneto to one set of plugs, and one made up of multiple coil, one storage battery, timer, plugs, etc.
POPE-HARTFORD—Three cars, each with one storage and one dry battery, multiple coils, timer, plugs, etc. One car with two sets of dry batteries, multiple coils, timer, plugs, etc.
POPE-TRIBUNE—One car with two sets of dry cells, multiple coils, timer, plugs, etc.
POPE-TOLEDO—Five cars, each with low tension magneto and single non-vibrator coil, distributor, plugs, etc.; also one set of dry batteries, on same coil, distributor, plugs, etc.
ROYAL—Five cars, each with high tension magneto, self-contained, one one set of plugs; also one storage battery, multiple coil, timer, etc., on same plugs.
STEARNS—Four cars, each with low tension magneto, single non-vibrator coil, distributor, etc., to one set of plugs; also one storage battery, multiple coil, timer, etc., to another set of plugs.
STEVENS-DURYEA—Five cars, each with one storage and one dry battery, multiple coils, timer, plugs, etc. One car with two sets of dry cells, multiple coils, timer, plugs, etc.
STUDEBAKER—Six cars, each with make and break system and low tension magneto. One car with two storage batteries, multiple coils, timer, plugs, etc.
S. & M. SIMPLEX—Four cars, each with high tension, self-contained magneto on one set of plugs; also one storage battery, single coil, distributor, etc., on another set of plugs.
THOMAS—Two Flyers, each with high tension, self-contained magneto, to one set of plugs; also single, non-vibrator coil, distributor, etc., to another set of plugs, with one storage battery. Three "Fortys," each with multiple coils, timer, one set of storage and one of dry batteries, to one set of plugs.
WALTER—Three cars, each with low tension magneto, single non-vibrator coil, distributor, etc., to one set of plugs; also multiple coil, one storage battery, timer, etc., to another set of plugs.
WINTON—Six cars, each with multiple coils, timer, one set of dry and one of storage batteries, plugs, etc.

FOREIGN CARS.

C. G. V.—Four cars, each with low tension magneto, single non-vibrator coil, distributor, etc., to plugs; also one storage battery on same coil, timer, distributor, plugs, etc.
CLEMENT-BAYARD—Three cars, each with make and break and low tension magneto; also jump spark system of one storage battery, multiple coils, plugs, timer, etc. One car with two separate jump spark systems, one composed of a high tension magneto, self-contained, direct to plugs and another set, of one storage battery, multiple coils, timer, plugs, etc.
DARRACQ—Five cars, each with make and break and low tension magneto. One car with low tension magneto, multiple non-vibrator coils, etc., to plugs. Also one storage battery on same coils and plugs. One eight-cylinder car with high tension, self-contained magneto to one set of plugs; also multiple coil, timer, etc., to another set of plugs, with one storage battery.
DE DIETRICH—One car, with make and break and low tension magneto.
FIAT—Seven cars, each with make and break and low tension magneto.
HOTCHKISS—Four cars, each with low tension magneto, single non-vibrator coil, distributor, etc., to plugs; also one storage battery on same coil, distributor, plugs, etc.
I. F.—To cars, each with low tension magneto, single non-vibrator coil, distributor, plugs, etc.; also one storage battery on same coil, distributor, plugs, etc.
PANHARD—One car, with low tension magneto, single non-vibrator coil, distributor, etc., to plugs; also one storage battery on same coil, distributor, plugs, etc.
RENAULT—One car, same as above.
ROCHET-SCHNEIDER—Three cars, each with make and break and low tension magneto.
ROLLS-ROYCE—Two cars, each with single coil, distributor, one storage battery, plugs, etc.

Relation of Compression to Speed and Economy

By HERBERT L. TOWLE

The full subject of compression in its relation to the quality of the mixture, the character of the fuel and the speed of the engine is quite complex, but some general principles regarding it may be laid down here.

The ease with which a charge will ignite depends on four things: the richness of the fuel, the quality of the mixture, (i. e. the proportion of gas to air), the temperature of the charge and its pressure. If a charge be compressed sufficiently, it will, by virtue both of the pressure and of the increase of temperature, which is caused by the compression, ignite spontaneously.

For illuminating gas in ordinary mixtures, the point of spontaneous ignition is found at about 100 pounds gage compression. Gasolene ignites spontaneously more easily, and the compression of gasolene mixture can seldom be carried to advantage about 75 pounds gage. On the other hand, alcohol and lean gases, like producer gas, will stand a very high compression, up to 150 pounds and even more.

The rapidity with which the flame will spread through a charge of gas and air depends on substantially the same things, with the addition that it spreads more rapidly in a homogeneous mixture than in one which is "stratified," i. e., is richer in one part than in another. An exception to this rule may be noted in the fact that a slightly thin mixture will burn faster than a slightly rich mixture and, in fact, a little faster than a mixture in which the gas and air have the chemically correct proportions. This fact has not been explained, but its existence is familiar to those who have operated gas engines.

It will be noted that in a slow speed engine there is ample time for the combustion to be completed when the piston is near the inner dead centre and, consequently, moving very slowly, whereas in a high-speed engine this time is much shorter and we are compelled to make use of some of the time before and after. The faster an engine runs the greater will be the fraction of a revolution that must be allowed for this charge to burn.

Although the burning of the charge in a slow running stationary engine resembles an explosion, in a high-speed automobile engine it becomes a problem to burn the charge fast enough. It is not at all uncommon in these high-speed engines for combustion to be still incomplete even when the exhaust valve is opened, so that flames issue from the exhaust port. Of course such operation as this indicates some defect in the quality of the mixture which renders it slow to burn, or else the igniting spark is not sufficiently intense, for it is a fact that a charge will burn faster if ignited by a strong spark than if ignited by a weak or "thin" spark. When the mixture is of the right quality for rapid combustion and the spark is as strong as the ignition apparatus will safely bear, it becomes necessary to advance the timing of the spark.

An early spark does not of itself increase the power of an engine. It merely enables the engine to develop as great, or approximately as great, a turning effort at high as at low speed.

As a matter of fact, an early spark, though unavoidable with high speed, is theoretically disadvantageous, for the reason that as much power cannot be obtained with a very early spark as could be obtained, if the charge could be burned sufficiently fast, with a smaller advance. The reason for this will be apparent from the fact that in the high-speed engine the piston is doing more negative work, since the pressure of the rising combustion is added to that of the compression, and combustion is not completed as early, so that the top of the indicator diagram is more rounded than it ought to be.

It will be seen from the foregoing that high speed, early ignition and high compression virtually go together, since in a high-speed engine the compression can to advantage be made higher than it can with low speed. This applies particularly to small motors, in which high compression is only justified by high speeds, for the reason that at slow speed the combustion would be completed long before the piston had a chance to move out and expand the hot gases and, consequently, a large part of the heat would be lost to the cylinder walls or to the walls of the combustion chamber. The obvious mechanical disadvantages of high compression for small motors are also here to be taken into account, such as the greater wear and tear on the moving parts, the greater chance for leakage and the greater liability to pre-ignition.

As regards high compression in large engines, it may be said that the mechanical disadvantages here do not weigh so heavily, especially if the engine is of the stationary type, and the compression is made as high as possible, for the sake of economy. In large engines there is a large body of gas and air to be burned and it takes the flame considerable time to propagate through the mass. The chief difficulty here in using high compression is the liability to pre-ignition, which is considerably greater than in small engines, because of the greater thickness of the cylinder walls and head and the consequently slower flow of heat through them, which permits the inner skin of the walls and head to become hotter than it would if the walls were thin. The liability of the exhaust valve to overheat has already been mentioned, and the same tendency is true of the piston head. In fact, it is found desirable in a few of the largest stationary engines to cool the pistons by circulating water inside of them, and the exhaust valves are quite frequently cooled in this manner.

One way of avoiding this liability to pre-ignition in large engines is to dilute the charge. Although for any particular gas or vapor there is some one proportion of it with air which gives the most energetic combustion, it by no means follows that the most economical results are to be obtained from this particular proportion and no other. If a mixture be diluted below the point of ready inflammability with ordinary compression, by the simple expedient of increasing its compression sufficiently, it may be rendered again as inflammable as before. In the same way and for the same reason, a compression.

say, of 150 pounds, though quite out of the question with ordinary illuminating gas or with natural gas in the usual proportions, becomes immediately practicable when we add, say, 25 per cent of air to the mixture to prevent it from spontaneously igniting. It can be shown that such a mixture compressed to that extent will develop actually a higher fuel economy than would be the case if the same weight of fuel were burned in a richer mixture under lower compression. Although the temperature of the explosion is not as high, the pressure at the point of exhaust is lower and the range of temperature is also greater. In other words, the ration of expansion is greater and the drop in temperature between explosion and exhaust correspondingly greater.

Large stationary engines have been built by Clerk, the well-known English gas engineer, in which, at the end of the suction stroke, an additional quantity of fresh air was pumped into the cylinder by a separate air pump, thus increasing the pressure of the charge in the cylinder above that of the atmosphere before compression was begun. These engines show quite an extraordinary gain in economy over engines otherwise similar but lacking

the diluting feature. Another builder has accomplished substantially the same result by drawing first a partial charge of pure air into the engine, then the fresh mixture, so that when the whole was compressed, the fresh mixture would be in the combustion chamber, where it could be reached by the igniting spark. Still other builders have within quite recent years successfully injected water or steam into the combustion chamber to dilute the fresh charge and reduce its inflammability. They have thereby been enabled to use compression as high as 150 or 160 pounds per square inch with corresponding economy.

In alcohol engines, on account of the small liability of the fuel used to ignite spontaneously, which is due largely to the fact that it contains 10 or 15 per cent of water, similarly high compressions are used and, although for equal weights the heat energy of alcohol is much less than that of gasoline, it has been found possible to obtain the same horsepower from a pound of alcohol as from a pound of gasoline, owing mainly to the fact that alcohol permits the use of higher compression.

The Future of the Carriage Automobile

By W. HILDRETH

I have been asked to write in regard to the future of the carriage automobile as distinguished from the ordinary type of machinery. In order to predict the future of any product intelligently, it is necessary to know its history and also its *raison d'être*, so to speak. Having been connected with the only company manufacturing this type of vehicle, since the organization of the company five years ago, I have had an exceptionally good opportunity to observe the development and growth of what is now known as the carriage or buggy automobile.

Five years ago the manufacture of automobiles had just begun to assume the dignity of an established industry. Manufacturers were far from satisfied with their product and the public much less so, although the progress that had been made was probably greater than should have been expected at that stage of the art. While the general public was quite ignorant of the reasons for automobiles being designed on the low-wheeled plan, and was wholly uninformed as to the possibilities of a high-wheeled machine, there arose quite a strong demand from many directions for a machine of that type on account of the poor conditions of most country roads and many city streets. Another thing that inspired this demand was the desire by many for a solid rubber tire of moderate weight and cost in place of the expensive pneumatic tire. This combination is only practicable with a high-wheel, on account of the speed of an automobile and the fact that an automobile is self-propelled and does not have the "lifting" advantage of the horse-drawn vehicle over depressions or obstructions on the road.

The Holsman automobile was the first machine of the carriage type to meet the above requirements, and the fact that this machine has stood the test of five years time and has grown rapidly in favor, is conclusive evidence that the carriage type of automobile is here to stay. If the question were asked why there are not more makes of this type on the market, the answer would involve several reasons.

In the first place, the ordinary types of construction use either a chain or shaft drive. These drives necessitate the

use of the differential gear, which makes it advisable to restrict the size of the wheels to the dimensions commonly in use. The Holsman patent was the first successful attempt to get away from the low wheels, and was accomplished by the use of the cable drive which dispensed with the necessity of the differential gear. With this device any size of wheels could be used. The regular carriage wheel was therefore adopted as having been found by the carriage and wagon makers the most practicable for all conditions of roads.

In the second place, the ordinary type of machine having been found to be practicable for ordinary conditions, and there being a demand for more machines than could be manufactured anyway, the general trade continued to follow the accepted lines as being the lines of least resistance. Also in the early days when it was questionable whether the manufacture of automobiles would ever prove to be a permanent industry, there was more or less timidity about departing from the conventional styles for fear of inviting failure.

There was perhaps still another early reason for following accepted types, in that automobiles at that time were used almost exclusively by the leisure class. This class of purchasers is more apt to follow an accepted style on account of its being in vogue, regardless of the first cost or expense of maintenance.

However as the use of automobiles increased, and their possibilities were realized, there arose a demand for them from the professional and business class. This class of purchasers demanded not only a moderate priced machine, and a machine giving the fewest possible troubles, but a machine adapted to the greatest variation of road conditions. As intimated above, the high wheel construction appealed to this class for reason of its greater adaptability to bad roads and streets. The solid tire naturally appealed to them on the theory of "the fewer sources of trouble, the fewer troubles." The carriage style of vehicle was very acceptable, as this was the type of vehicle to which they were accustomed in their business and with which therefore they were familiar.



A Midwinter Test of a Motor Car.

Multiple Jet Carbureter

Ever since the gas engine came into popular use as a propulsion power of vehicles, carbureters have caused to be expended much engineering thought. The early efforts were confined to the development of a mixing device which would provide a gas of best efficiency at a stated engine turning, for the early gas engines were of the constant speed type.

With the demand for a flexibility of running carbureter development brought a new problem, more or less successfully met. In cars of medium or small power and light weight this problem has not been so difficult of solving but in high powered and heavier cars the necessity of continued carbureter experiment has been noted.

The problem to be presented was that of supplying a mixture which would fully meet the requirements of the motor and manipulator of the car. And while the development of the carbureter has made considerable progress in the year past some designers have come to a new thought.

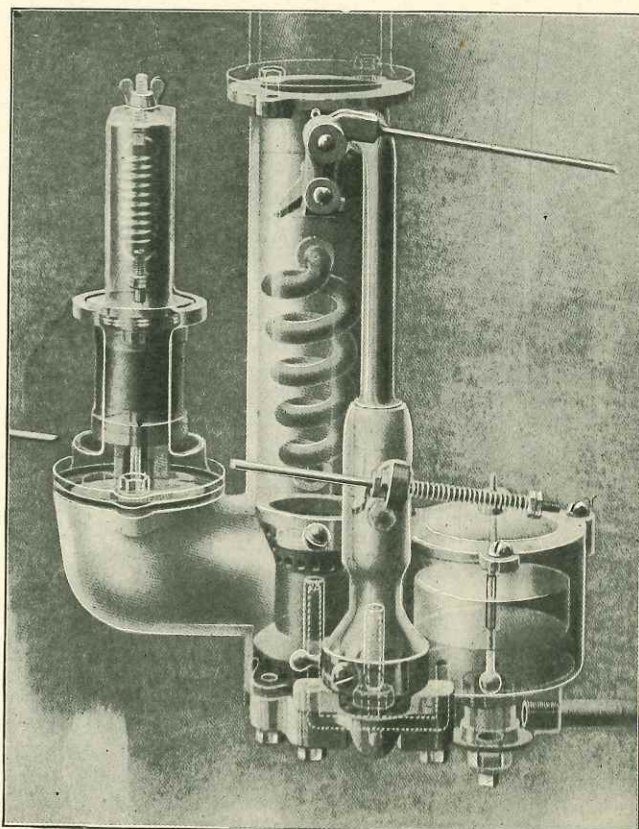
In the Columbia, Stearns, Stevens-Duryea and some other cars in 1907 is found a multiple jet or combination of two carbureters, the designers being of the mind that no one carbureter can be expected to meet the varying demands of gas engine power.

The theory of the multiple jet is that the multiplicity of jets gives opportunity to generate gas in proportions required. For instance, there is a small carbureter to meet the demands of city driving and slow speed and then, immediately alongside is a larger capacity carbureter the function of which is to supply gas for higher speed and power driving.

Engineers will argue that the reason for the imperfect running of a motor in its range of work is that it cannot be counted upon to supply a mixture, and then deliver it to the cylinders in the approximately correct proportions.

While it is possible to so regulate a carbureter to adapt itself to one of the two sub-divisions of motor need, it is not, in

the opinion of these designers, feasible to employ one carbureter in the whole range of work. A mixing chamber of such capacity as to furnish gas to a motor at high speed is too



Columbia Multiple Jet Carbureter.

large at small power need, on the theory that a small amount of gas allowed to escape the aperture of a nearly closed throttle immediately expands within the area of manifold piping, once it has escaped the throttle opening. Such expansion carries with it the presence of raw gasoline in the cylinders with its attendant uneven running and carbon fouling. On the other hand a small amount of gas generated within a mixing chamber of small diameter is returned immediately into the cylinders by the great air velocity through the small diameter piping.

A typical multiple jet carbureter is that on the 1907 Columbia cars in which one float chamber and float is accommodated to the needs of both jets. This carbureter is shown in X-ray detail with the primary and auxiliary air parts the course of the gasoline flow to the jets and the throttle openings plainly indicated.

The Palmbla Hydraulic Oil Clutch

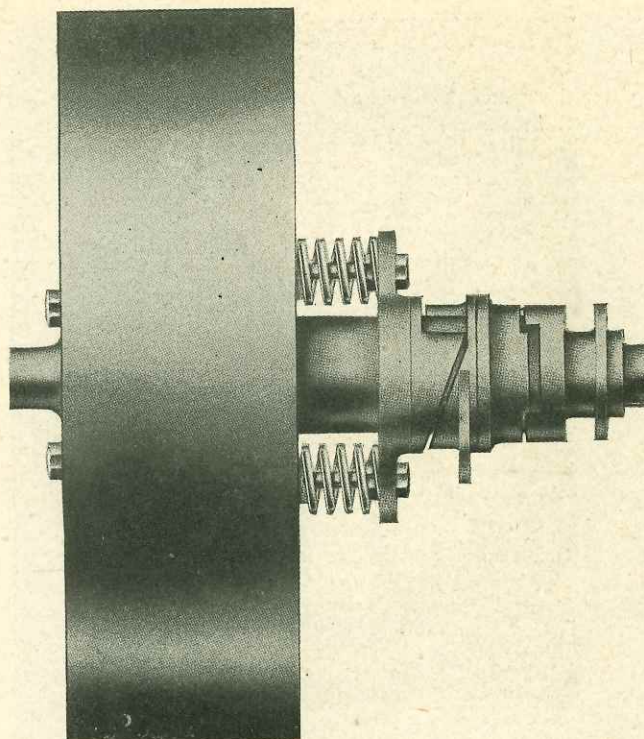
The North Chicago Machine Company, of North Chicago, Ill., has announced that it will exhibit and demonstrate the Palmbla hydraulic oil clutch for the first time at the coming Chicago motor car show. It is claimed that, by the use of this clutch device, is eliminated the use of speed transmission gears, excepting that for reverse. Owing to the type of construction, the clutch displaces the engine fly-wheel and saves wear on motor crank shaft at fly-wheel end, the clutch having its own bearings. The hydraulic oil clutch is simple to operate, one foot lever controlling the entire mechanism. It is further claimed that, by the slip of the clutch, the car may be driven on high gear at the slowest speed. The car may also be started from a stand-still on the high gear without jerking, the gradual advance of the car when power is applied being as smooth as that of an electric. The price of the Palmbla hydraulic oil clutch is \$150.

In construction this type of clutch offers many radical features. The fly-wheel body of the clutch is bolted to the crank shaft of the motor. The clutch head carries the main bearing of the drive shaft, being bolted solidly to the fly-wheel body. The piston blades each have a slot and are fitted to slide into the cone-shaped ring. An eccentric ring, cast integral with the clutch head, carries the auxiliary ring, to which are attached two studs that pass through the stuffing box in the head of the clutch and are bolted to the sliding flange. A piston ring, having four or more slots cut at right angles to each other and into which the piston blades slide, is keyed to the driven shaft. Keyed to the end of the main bearing is a jaw-ring between which and the sliding flange are two wedge-shaped rings. All parts are securely fastened and revolve with the fly-wheel except the driven shaft, piston ring, piston blade and cone ring, these parts revolving freely if there is no oil in the body of the fly-wheel. When the clutch is installed in the car, taking the place of the fly-wheel, about $1\frac{1}{2}$ or 2 quarts of oil is poured into the oil space through a small opening in the rim of the fly-wheel, the clutch being absolutely oil-tight.

The Illinois Motor

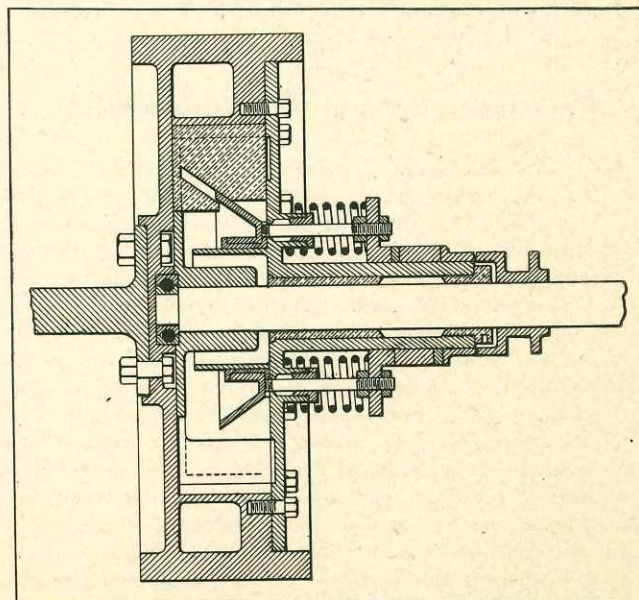
The Moline Pump Company, of Moline, Ill., which for several years has been making the Eli stationary gasoline engine, recently started the construction of a new two-cycle vertical motor for automobiles which is known as the "Illinois."

This engine was invented by E. B. Parkhurst, superin-

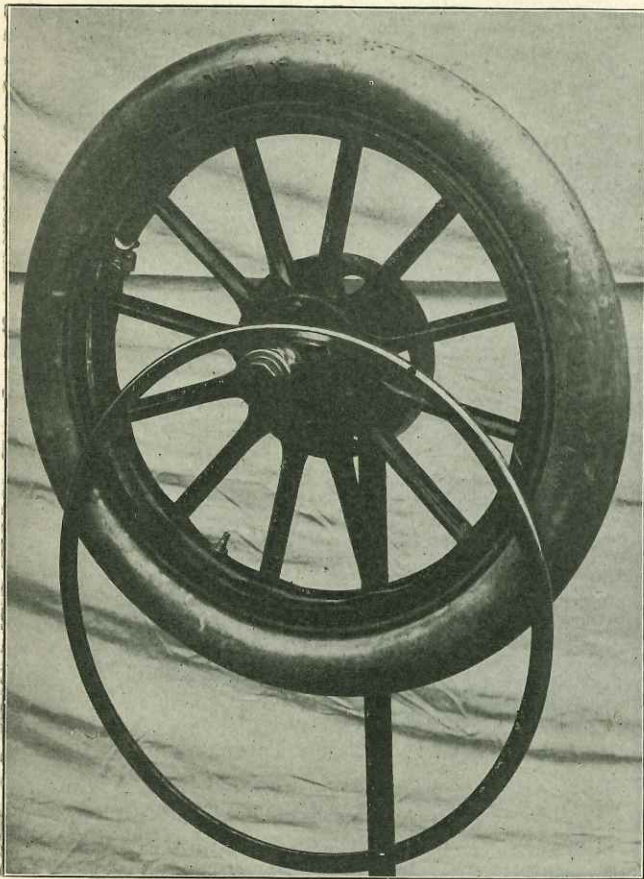


Palmbla Hydraulic Oil Clutch.

tendent of the Moline Motor Company. The concern claims that they have applied to the Illinois motor the cross-head principle which has made the Eli two-cycle motor famous, the result being the production of a motor that gives a great maximum power with the minimum mechanism, cylinder for cylinder, than any four-cycle motor. In the Illinois the manufacturers have done away with the air tight crank case used in other two-cycle motors in which the explosive mixture of gas and air is stored and partially compressed. They have also eliminated the following parts absolutely necessary in a four-cycle four cylinder motor: Four exhaust valves, four inlet valves, eight caps over valves, eight valve seats, eight



Cross Section Palmbla Oil Clutch.



Ajax Rim and Tire Showing Clincher Ring.

valve springs, eight valve collars, eight lifters, eight cams, one cam shaft, three gears—sixty parts in all besides set screws, pins, pivots, etc.

The demonstration car which the Moline Pump Company intended to have at the show could not be made ready in time and thus only the motor is being shown. The officers of the big Moline concern are E. H. Sleight, president and treasurer; G. A. Townsend, jr., vice-president and C. E. Dietz, secretary.

Pneumatic Springs for Automobiles

W. C. McCullough, an attorney of Bucyrus, O., has invented a pneumatic spring for automobiles, which, so it is believed, will do away with a lot of tire trouble, will act as a shock absorber, while the cost of maintenance of automobiles will be greatly lessened. The inventor describes the new invention as being in the form of a rubber bag, which is made from rubber and canvas. The spring is attached under the body of the car and on top of the side, where the ordinary steel springs are attached. The spring-bag or bag-spring, as the new invention may well be termed, has a nipple attached so that the spring can be inflated just the same as an ordinary tire. The amount of air pumped into the spring may be regulated to suit the load, roads and conditions otherwise. Through the use of the new spring, solid rubber tires, instead of pneumatic tires, can be used with marked success. The new spring takes up the shock, thus making it possible for far easier riding, while the new device has a life that may be termed indefinite.

Tire Compound

A tire compound to be injected into the inner tube of an automobile tire and which contains the resiliency of the pneumatic tire without its attendant danger of puncture, is the invention of L. F. Lewis and C. H. Cooley, of Hartford, Conn. The compound is put into the inner tube in the form of a paste and it cannot be removed except by cutting the tire. When a tube has been filled with it, there is nothing to distinguish the tire from a thoroughly inflated pneumatic tire. Yet the owner may drive nails into the filled tire or subject it to any of the accidents which ordinarily disable a pneumatic tire, without interfering with its efficiency. The inventors claim that the compound maintains a resiliency that is superior to that of the pneumatic tire. The Elastro Manufacturing Company, with a capitalization of \$50,000, has been organized to introduce the new process. H. B. Philbrick is president of the company.

Hicks Speed Indicator

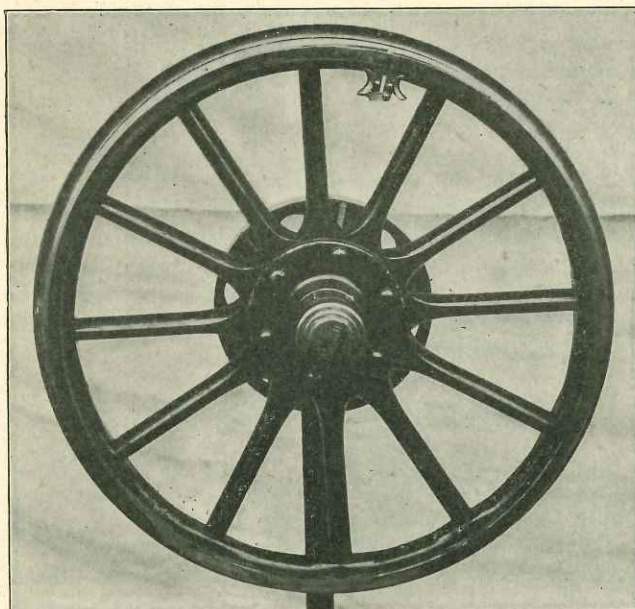
The model D Hicks speed indicator for 1907 is a most complete and compact instrument, comprising four recorders all shown on one dial, which is but three inches square, and enclosed in a handsome polished brass case, which is cast in one piece and is water and dust tight.

The four recorders are a speed indicator showing the miles per hour from one to 75 miles, evenly graduated; a trip recorder, registering the number of miles and tenths of miles made in a trip, which is easily reset to zero by a button on the right side of the indicator; a total odometer, showing the total number of miles travelled in a season up to 10,000; also a watch movement giving the correct time, which can be wound and the hands set by a button on the left hand side of the instrument.

The speed indicator hand is controlled by centrifugal force produced by the revolutions of a ball governor, which is driven by a flexible shaft through two gears made of tool steel, all running on ball bearings. The



Ajax Tire Showing Opening Ends of Locking Ring.



Ajax Rim with Clincher Ring Removed.

mechanism is very simple and made of the best material. Friction has been reduced to a minimum, also the load on the flexible shaft, and there is positively no danger of the shaft breaking from strain.

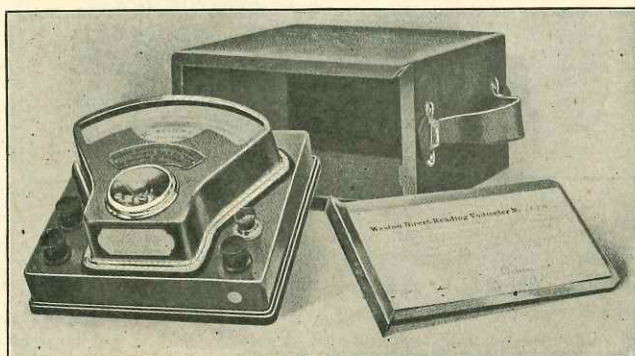
The speed indicator is guaranteed accurate at all speeds, and there is no wobbling of the hand even on rough roads.

It has been demonstrated that a small watch movement is the correct style of timepiece for an automobile and will stand all kinds of shock and vibration without getting out of order, which cannot be said of a clock, no matter how expensive the movement. The odometer used in the Hicks speed indicator is the well known Veeder type.

The Hicks speeder indicator, complete, including attachments to fit any style and make of automobile, fully guaranteed, flexible shaft and all, is sold at \$50.

Weston Electrical Instruments

Few users of motor cars of the gasoline or electric types realize the importance of having accurate instruments for testing the conditions of the electrical equipment, batteries, dynamos and motors. To the average man, anything in the way of an instrument, either ammeter or voltmeter, that will give



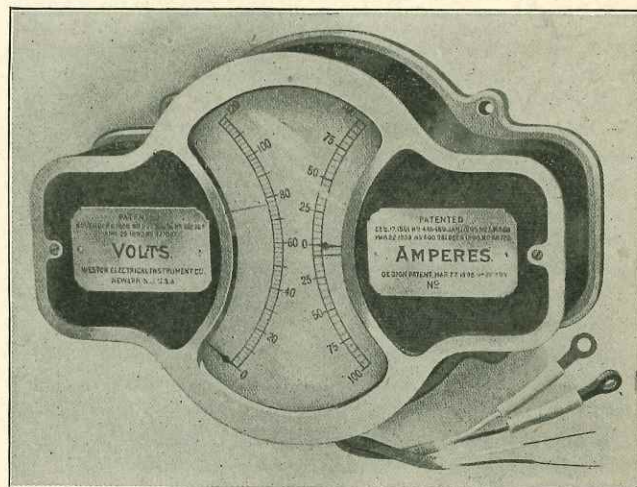
Weston Standard Portable Voltmeter.

anywhere near a correct reading will serve the purpose. Many such people have been heard to remark that they knew their meters were "three or four volts or amperes off," but that they could get close enough to it to show what their batteries contained. Such tests are of no practical value, for, if an instrument varies to the extent of two or three volts or amperes in a scale of 10 to 20, in a short time after it is purchased there is no telling from day to day to what the variation has increased; therefore, such instruments are not fit to take a reading, not even from a set of dry cells used for ignition work. For electrical carriage work where storage batteries are used, it is absolutely essential that their condition at all times be known to the operator; hence accurate testing instruments are as vital to the successful operation of the car, almost, as is the motor.

Among the foremost instrument makers in this country and in the world, for that matter, is the Weston Electrical Instrument Co., Newark, N. J. The line manufactured includes all kinds, for commercial as well as laboratory work. Their making has been reduced to a science.

The principle upon which all Weston instruments are made is one worked out by Mr. Weston years ago and was so radical in its departure from the practice then in vogue that his efforts were scoffed at. The result of his work, however, is the standard by which others are judged.

Prior to Mr. Weston's inventions measuring instruments



Model 39 Duplex Weston Instrument.

were either of the soft iron type, having the defect of magnetic lag, or of the dynamometer type which were neither direct reading nor portable. By discovering a method of producing permanent magnets, negligible temperature, co-efficient alloys and a non-magnetic spring alloy, coupled with a method of treating the alloy during the course of manufacture to produce springs of the requisite electrical and mechanical properties, the Weston instrument became possible. Previous to the discovery of the method of making permanent magnets, so called permanent magnets were made, but were unreliable because of their loss of magnetism in a short time. It was because of this that the Weston principle was at first ridiculed.

The mechanism consists essentially of a light rectangular coil of copper wire wound on an aluminum frame, pivoted in jeweled bearings and capable of rotating in an annular space between a soft iron core and specially formed pole pieces of a permanent magnet. A light tubular pointer is attached to



E. V. Hartford's First Shock Absorber.

the coil and moves over a calibrated scale. The current is introduced into the coil by means of two spiral springs which also serve to control the movement. The movement of the coil is due to the dynamic action between the current flowing through the coil and the magnetic field of the permanent magnet. The pointer assumes a position of equilibrium when the action of the spring equals the tendency to rotation produced by the current and the magnetic field. Since the magnetic field is uniform and the torsion of the spring proportional to the deflection, the scale is practically uniform.

The "dead-beat" feature of these instruments is produced by foucault currents generated in the aluminum frame when rotating through the magnetic field. These currents have a sufficient influence on the movement of the moving coil to cause the pointer to come to rest almost instantly and without friction.

The permanency of such instruments depends largely upon the small annular gap between the pole pieces and core and, as this is an important point, it should be borne in mind when selecting instruments. The small air gap referred to necessitates the greatest accuracy in mechanical construction, as does the balancing of the moving coil and pointer. An unbalanced condition of the moving system would introduce forces which an electrical instrument is not intended to measure and would interfere with correct readings; hence the importance of the proper balancing of all moving parts in all positions.

From the standpoint of economy, great care has been taken to produce a movement that requires the least possible amount of current consumption, 1/10 of one ampere being the consumption in the standard voltmeter. The special alloy composing the series resistance of all Weston voltmeters has a negligible co-efficient and, consequently, temperature corrections are unnecessary. In addition to this, the alloy has been carefully designed for absence of thermo-electric effect with other metals of the circuit.

The ammeter is somewhat similar in construction to the voltmeter, but is used in connection with a shunt which carries practically the entire current to be measured, the portion passing through the instrument itself being an almost immeasurable proportion of the whole. The action of the ammeter depends upon the drop in potential between two

fixed points on the shunt and, as this drop varies in direct proportion to the current flowing, the scale of the instrument is uniform. The shunt and instrument are connected by two small flexible leads and it is possible to place the shunt at any reasonable distance from the instrument.

The Weston company has not as yet produced an instrument of pocket size for users of small dry cells or storage batteries for ignition only, but does make a portable instrument, No. 1, which could be used for that purpose, if fitted with proper scale. Their Nos. 38 and 39 are used almost exclusively for electrical carriage work, they being designed so as to have both ampere and volt readings on the same instrument, thus simplifying the equipment in that respect.

The First Shock Absorber

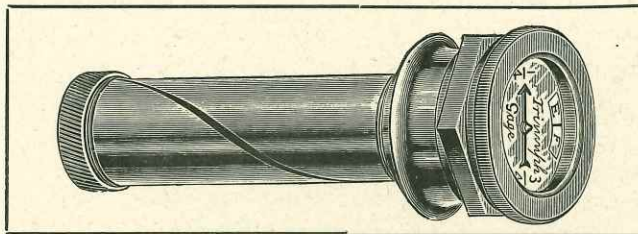
That the present perfected Truffault-Hartford shock absorber is not the result of a few days' experiment, is proven by an old photograph which shows E. V. Hartford, president of the Hartford Suspension Company, making one of his early shock absorber tests. It was taken about seven years ago and shows him on a bicycle with a heavy wooden wheel bound with an iron rim on the front, and a shock absorber on the forks.

"In riding this machine over cobble stones with the wooden wheels," said Mr. Hartford, "the difference in the riding qualities against the same machine having all three wheels equipped with pneumatic tires, is hardly perceptible. The style of shock absorber used is, of course, nothing like our present style, although the foundations of the present 1907 model is the result of the natural course of progression as more and more of them were put to use. Now there are fifteen manufacturers regularly equipping their cars with this shock absorber, which is the only one that has ever been adopted by any manufacturer."

The Triumph Gage

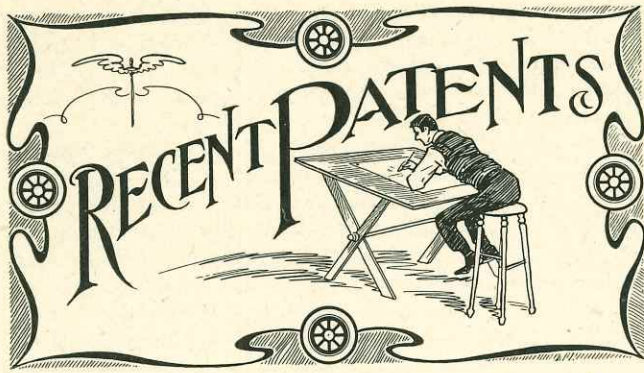
The Boston Auto Gage Company, Boston, Mass., manufactures the Triumph gage for tanks of automobiles and motor boats. These gages are magnetic and comprise a sheet metal float movable in a tube and turning a magnet that controls the movement of a magnetic pointer visible through the head of the gage. This gage has been adopted by the Pierce-Arrow, Matheson, Stearns, Knox and numerous other high-grade cars, and is endorsed by those using it.

The company is just getting out a gage especially for boats,

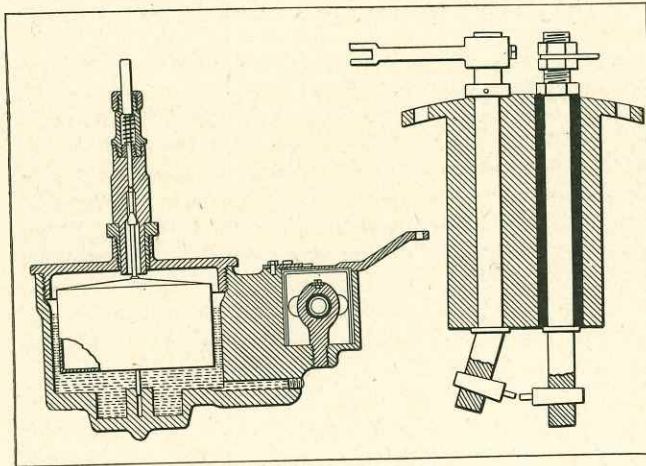


The Triumph Gage.

the tube having a collar to connect with the top of the tank and being extended to expose the head of the gage in a plate at the deck. It is also making a gage called "Triumph, jr.," applicable to the sides or ends of the tank, and is perfecting a gage called Tankoscope, to be applied to the dasher of a motor car.



Carbureter—Letters Patent No. 843,052 to Lars Anderson, Chicago, assigned to Triplex Gas Engine Co., of New York, Serial No. 235,912—A valve housing is provided, having an inlet and outlet connected with a fuel supply passage. Two cup-shaped valve members telescoped together and arranged within the valve housing, extend transversely across the passage. The valve members have registrable openings through the side wall of the housing, the tube extending through the openings.



Carbureter

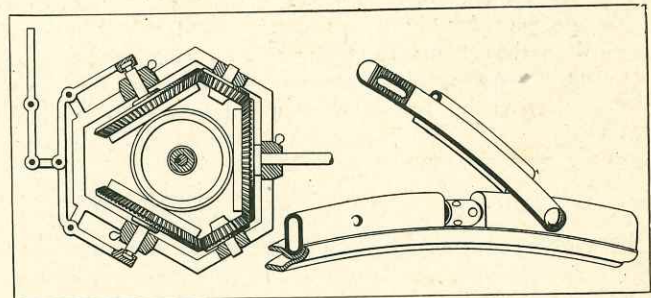
Electric Sparker.

Electric Sparker for Gas Engines—Letters Patent No. 841,816 to Reuben P. Ralston, Woodsfield, O., Serial No. 248,483—The body of the sparker is provided with two passages or bores, one of which is of larger diameter than the other, for inserting an insulating sleeve. A stationary stem or electrode is fixed within the insulating sleeve. The inner end of this stem projects beyond the body and is provided with a tapering plug, having a pin in the larger end. The oscillating electrode is mounted to turn the bore of the smaller diameter and extends inwardly.

Variable Friction Gear—Letters Patent No. 841,850 to Joseph R. Crabill, Carthage, Ill., Serial No. 307,987—The variable speed friction gear comprises a main friction disc and a plurality of auxiliary friction disc wheels surrounding the friction roller wheel. The several friction disc wheels are arranged with faces at right angles with one another and in such a position that their faces form some of the sides of an irregular polygon. These wheels surround and are each in contact with the friction roller wheel. The auxiliary friction disc wheels are located on suitable framework, with their shafts journaled in boxes which are also located on the frame work. Means are provided for controlling the disc wheels

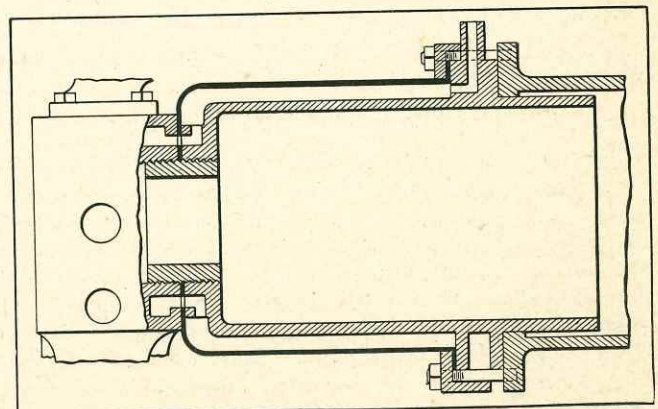
by moving them in the direction of their axes toward the friction roller wheel to increase the contact and from it to decrease the contact on the roller wheel.

Wheel Rim—Letters Patent No. 841,802 to Thomas Midgley, Hartford, Conn., assignor to the Hartford Rubber Works Co., of the same place, Serial No. 267,998—The wheel rim is provided with side flange, having a joint in the rim with a clip or cover pivoted at one end to the side flange adjacent to the joint and having at the other end a longitudinal slotted arm. This is provided with a toothed face on its outer surface, a locking plate, also with a toothed face, being adapted to co-operate with the teeth on the slotted arm, with a screw extending through the locking plate and through the slot in the arm.



Variable Traction Gear Wheel Rim

Jacketing for Engine Cylinders—Letters Patent No. 841,846 to Alanson P. Brush, Detroit, Mich., Serial No. 135,205—The cylinder is provided with an outwardly projecting flange toward one end and a valve chamber of a water jacket wall, constructed with a flange at one end and clamped between the end of the cylinder and the valve chamber, forms a water chamber between the jacket wall and the cylinders. The opposite end of the water jacket wall is formed with a flange, being seated against the adjacent flange of the cylinder, with a separate ring for clamping the adjacent flange of the jacket wall against that of the cylinder. The frame of the engine is provided with means for clamping the ring in place and for engaging the adjacent end of the cylinder with the engine frame. The valve chamber is simultaneously clamped to the cylinder, which in turn clamps the inwardly turned end of the water jacket, thus forming a gasket between the cylinder and the cylinder head. The gasket is provided with water passages through which the water jacket of the valve chamber connects with the water chamber around the cylinder, provision being made for sealing the other end of the water jacket upon the cylinder.



Jacketing for Engine Cylinders.



Teamster—Motor Car Driver

Chicago—Editor The Motor Way—The company for which I work as a teamster is arranging to put a few automobile delivery cars on instead of teams. Being now in their employ, if I can fit myself by learning to operate a car, I think I would have the preference when they employ drivers for the automobiles. Will you please tell me the quickest way to master this business?—G. F.

The usual custom of the selling agents is to furnish an instructor for the operator and this will probably be done in your case. However, to make sure of your claim to the new employment, you should prepare by entering some of the evening classes in a reliable automobile school. This will not interfere with your work in the day time and you can learn about the detail of construction and as much of the principles of operation as the time will permit and, even after you secure the new position, the school will be a good place to solve some of the difficulties that you will undoubtedly meet in the performance of delivery car operation.

Extra Weight Upon Tires

Belvidere, Ill.—Editor The Motor Way—Will you please tell me whether the extra weight on rear tires, where the transmission is assembled with rear axle as a unit with it, is very much more severe on the tires than where the weight of the transmission comes on the springs? I have been working on plans to build a car for myself and this method of unit axle and transmission looks simple and efficient.—E. G. M.

If you mean unit construction as applied to pleasure cars where pneumatic tires are used, the few additional pounds the transmission will weigh cannot have very much effect upon the tires. Theoretically the less the weight below the springs the better, but as the construction you mention is usually very light it probably would require twice its weight to perform the same work if placed upon the springs and the power transmitted to the rear axle by chain or shaft; hence it may be stated that 10 pounds below the springs can do more damage to the tires than 20 pounds would do above the springs. This of course is only theorizing. Motor Way would be pleased to hear from readers who have had experience with this rear axle unit construction as to the extra wear on tires if such is the case.

Oil Deposit on Spark Plugs

Coldwater, Mich.—Editor The Motor Way—Please tell me how to get around a little trouble I am having with my spark plugs. The engine is a two-cylinder opposed and is oiled from a tank placed upon the top of the crank-case. Pressure is used from exhaust pipe to force the oil into the sight feed chamber where the flow in each direction is adjustable. I have tried every conceivable way of regulating the flow to the cylinders. I get the best results by giving the front cylinder 8 drops a minute and the rear 4 drops, but every time I go to start the engine after it has been standing a few hours the rear plug is always fouled so it will not ignite the charges

of gas. The piston seems to push the surplus oil down into the spark-plug opening and put it out of business. The quality of oil is not to blame, for I have tried every grade I could get. Plugs—I have tried at least a dozen different sorts with same results.—F. W.

There are two and possibly three reasons for your trouble. If your oiler furnishes oil to sight feed chamber by exhaust pressure, the pressure on oil in tank will be at least 1 lb. when you stop your motor. If this pressure is not released it will continue to distribute oil through the different leads until released and in getting release will displace nearly $\frac{1}{2}$ a pint of oil, part of which goes to cylinders and floods them. This accounts for the trouble in starting. You should provide a release cock on oiler to release air pressure when motor is stopped. You say that the piston seems to push the surplus oil down into plug opening. There is possibly some fault in the design of your motor. The spark-plug should not be lower than the center of the explosion chamber and if they were at the top so much the better for the conditions you complain of. You do not give the size of your motor but if the cubic displacement of piston is between 50 and 60 cubic inches 4 drops of oil per minute to each cylinder should suffice, provided splash from crank-case is kept in working order.

Auxiliary Air Intakes to Carbureter

Omaha, Neb. Editor The Motor Way—I noticed in your account of the recent automobile show in New York that two or more cars were said to have two auxiliary air intakes on the carbureter. As no definite object for this addition was given I would like to have an explanation. Cannot one auxiliary be made to admit air enough by having a sliding cylindrical graduated valve under the control of the operator, thus reducing the number of parts and thereby simplifying construction?—L. R.

The object of one or more auxiliary air intakes to the carbureter is to increase the flexibility of motor. It has long ago been proven that where air is admitted to the carbureter through one opening only without a check of some sort, that the motor speed cannot be varied to the desirable extent, hence the need of some arrangement to vary the air intake according to the vacuum created in the carbureter by the piston action. This was overcome to some extent by adding a second air intake with a check valve inserted, governed by an adjustable spiral spring whose tension could be regulated according to requirements. The object of adding a third or even fourth auxiliary air intake is merely an extension of this principle. One auxiliary can be made to fulfill the requirements under the conditions you set forth, but will increase the labor of operating the machine. If a carbureter will work correctly and do it automatically one cannot improve on this by displacing the automatic feature for a hand control.

Chicago. Editor The Motor Way—We notice an article in your December 20 issue, page 25. We thank you very much for your reply to T. K. B. We wish to call your attention, however, to an error in your understanding of the gears on our machine. We note you say for "high gear," "full cable grip," "half grip," etc. This is a mistake, as the speed of our machine is not regulated by the grip on the cable. We have two sets of sprocket wheels, the high gear set and the low gear set. We then, of course, obtain different speeds on either gear by regulating the throttle, that is, by throttling the amount of mixture.—The Holsman Automobile Company, by W. Hildreth.

The Useful Life of a Motor Car.

By HOWARD GREENE.

There is a somewhat curious idea prevalent among those who do not use automobiles and obtaining to some extent even among those who do, that an automobile is a thing of a season—a short-lived toy that must perforce be cast aside after a year's use. Popular opinion—which very often means the opinion of those who don't know—sometimes goes so far as to concede that a particularly expensive car may be useful for two or three seasons, but the average machine of moderate cost is given a year's grace and then expected to be ready for that mechanical graveyard—the scrap heap.

There is an excuse for this idea, though it can hardly be called a reason, and an incident that actually occurred not long ago throws a good deal of light on the subject. A young man who owned a well-built light runabout was conversing with a friend who had asked questions about the expense of maintaining such a machine.

"There's a lot of fun in it," said the owner, "but, when you add the cost of maintenance to the price of the car, it seems like a good deal of money to pay for a machine that you can't very well use after the first season."

After a little more conversation, he started the motor, climbed into the seat and essayed to turn the car around in a very short radius. Finding there was not sufficient room for this manoeuvre he ran one front wheel up onto the curb and off again with a terrific thump. As ill luck would have it, the sharp edge of the curb tore a piece of rubber out of the tire that had been started by some previous mishap, and the thump and the lateral pressure as the wheel slid down the face of the curb slightly bent the axle stub on that side. This was bad enough, but worse was the young man's attitude when asked if he would not have his axle straightened immediately.

"What's the use?" he growled. "They'll charge like blazes for doing the job. It doesn't look bad, anyway," leaning over and squinting at the axle.

This threw a bright light on his previous remark about the useful life of an automobile; doubtless the happy-go-lucky chap, who is a real and not an imaginary character, has done his full share toward spreading the unfortunate notion that the life of a car ends with the season.

As a matter of fact, an automobile is nothing more nor less than a piece of machinery, and generally it is a well-made piece of machinery which, under ordinarily severe usage, is not subjected to stresses that will destroy its usefulness in a single year. It is, of course, true that an automobile is subjected to very severe stresses in certain directions, but it is designed particularly to withstand these and withstand them it will, if given a fair chance. If, however, an accident alters the normal condition of any part—as, for instance, when an axle is bent and the car is operated in this condition—stresses are set up which cannot be provided for and cannot be foreseen. If the car is run much in such a condition, further damage is reasonably sure to follow.

This may be illustrated by going back to the case of

the runabout owner already mentioned. He first found that the car did not steer properly, having a tendency to run to one side, and he was kept in a state of uneasiness by the constant reminders that something was wrong. A week later, the car having been used daily without repairs, the steering pivot and the wheel bearing on the bent side were both abnormally worn and required adjustment. And, worse, the tire on that side was worn down to such an extent as to make it practically useless without re-treading. Then, and then only, was the straightening done—and yet the young man complained of the expense of automobiling! It is needless to point out that all the expense incurred in this instance was entirely unnecessary and was the result of carelessness and a desire to do something that looked smart—a "stunt."

An automobile will do its best so long as each of its component parts is kept in the best possible condition. Parts that are subjected to wear are usually either adjustable, so that the wear can be taken up, or are easily replaced at little expense. Ball and roller bearings are either adjustable or so made as to run for a very long time before renewal is required; plain bushings are easily and inexpensively renewed; split brasses are easily closed up. The pistons and cylinders are good for years of normal service. A steam engine cylinder, in which the bearing surface is very much smaller, proportionately, than in a gas engine cylinder, will last almost indefinitely and there are plenty of steam engines that have been in constant service for upwards of twenty years. Gears will, of course, wear in time, but modern gear-cutting is somewhat of a fine art and a really good set of gears will last for a long time without giving any trouble if they are properly lubricated and the shaft bearings kept adjusted so that the gear teeth will always be properly meshed. Thus it will be seen that the larger and more expensive a part is, the less likely it is to give trouble under normal conditions.

This is not theoretical talk, by any means, for there are plenty of low-priced cars still running after four or five seasons' work and apparently ready to keep on going for as many more seasons. The owner of such a car, however, will almost invariably be found to be a careful driver and one who makes it a point to keep his car in normal condition throughout. He will be in what may be termed "mechanical sympathy" with his car and will know almost instinctively when anything is not just right.

One motorist of this type has had a decidedly interesting experience. He saw an advertisement offering for sale a single-cylinder runabout at a very low price and, after getting an experienced friend to examine and see that no expensive parts were in bad condition, bought the car. Apparently the old machine—it had been run for two and a half seasons—was in the last stages of usefulness; and its progress, when it could be induced to go at all, was accompanied by weird noises. But new

bushings were put in wherever bushings were used; new crank-shaft bearings were fitted; one timing gear was replaced; every loose nut was tightened and lock washers or jam nuts applied wherever they had been omitted; a number of small parts were replaced and the entire mechanism adjusted, including the timing of the ignition. Cylinder, piston, crank-shaft, crank-case, valves and so on were found to be in good shape and were not touched except for cleaning and grinding in the valves. As a result, the machine ran with the smoothness and silence of a new one. For the rest of the season it gave the utmost satisfaction and then the owner decided that he wanted a larger car.

By dint of a good deal of searching and watching advertisements, he came across a twin-cylinder car of a size that suited him. It was of rather an ancient model and was, like the runabout, a veritable rattle-trap, but these facts made the price very low. So after satisfying himself that the principal parts were in fairly good condition, the motorist bought the machine, paying for it by selling the runabout, which brought 50 per cent more than he paid for it by reason of its fine condition and smooth running. He put his new acquisition through exactly the same renovating process during the winter and in the spring had a car in which he could take his wife and children about the country and which had cost, in actual cash, but little more than the price of a small runabout at a very low second-hand price. Later, the same process was repeated, with the result that the owner got a still better car and made enough on the deal to pay for the improvements and renewals. This is another instance from real life. The motorist in question is not troubled by excessive wealth, but nevertheless he has determined to become the possessor of a good-sized four-cylinder car by continuing the same process and without spending much, if any, more money. And doubtless he will succeed.

No one ever dreams of blaming the mechanism of a watch for not working right when it is clogged with dust or when an arbor is bent; a sewing machine or typewriter is not expected to work properly when out of order and, if it is forced into service in such condition, no one thinks of being surprised if its life is shortened, or of branding the machine as short-lived or unsubstantial and therefore expensive. No more should the automobile be labeled with a bad name because those who abuse it complain that it wears out before its time.

Automobile Laws in Indiana.

It has become quite the thing during the last few years to flood each session of the Indiana legislature with automobile bills, and while it was thought there was to be nothing of the kind this year, there will in reality be no exception.

During the session two years ago half a dozen bills, all aiming at the same thing, were introduced and after a careful consideration of them all, a bill was drafted that later became the present automobile law. So satisfactory has this been that it was generally understood that the automobile speed laws would not be changed this year.

In answer to their rural constituents who are yet seemingly very rabid against the motor car, legislators are preparing bills aimed at the "great evil." Unfortunately automobile men, not expecting anything of the sort, are not well organized for fighting such legislation and it will not be surprising if the speed laws are changed.

A bill that is practically a revision of the 1905 law, with decidedly more strict penalties and cutting the speed down to the narrowest margin, has been introduced by Representative Frump, who hails from Clay county. In brief the bill would have automobiles slow down to three miles an hour in passing all vehicles along the route, slow down at all curves and cross roads and raise the size of the state registration numbers from four to eight inches high.

The modest penalty of a possible maximum fine of \$300 is provided for the first offense; for the second offense he would make it possible to fine the unlucky motorist \$500, and for the third offense nothing less than a jail sentence of not to exceed thirty days would do, he thinks. The bill has been referred to the tender mercies of the Roads Committee and when it emerges it is believed there will be a small fight, at least, on the floor of the house of representatives, where it was introduced.

The one bill in which motorists were directly interested died on the floor of the senate because of the lack of a constitutional majority when it came to a vote. It provided stiff penalties for throwing glass, tacks or nails in streets or pubmen. There is a chance that this bill will be introduced again.

Henry Ford.

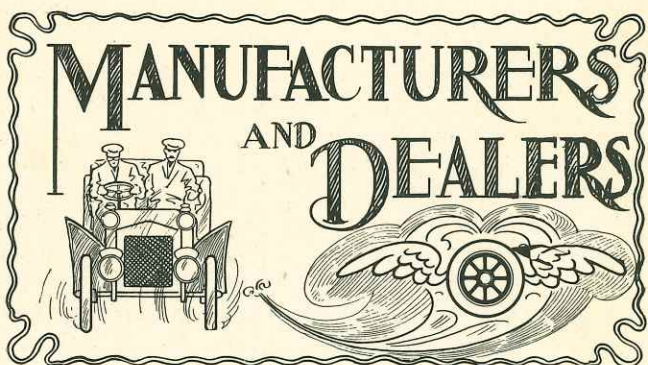
Henry Ford, with Elwood Haines and Charles E. Duryea completes the trinity of pioneer automobile builders in America. These three were driving self-propelled motor vehicles through the streets of their respective cities nearly twenty years ago—at a time when many others, now prominent as automobile experts had not yet begun to dream of the practical horseless vehicle.

The standing of Ford in the industry and the fact that his views are sought on almost every matter of interest connected with the industry, leads to a very general impression that he is a man of more years than he has seen. As a matter of history—and fact, which is not always history as it is writ! Ford has just passed his forty-first mile stone on life's road. He was born on a farm a few miles from Detroit and all his near relatives are farmers, though it is notable that his uncles, cousins and brothers are of the progressive type of agriculturists. All of them are successful and all have an inclination toward labor saving machines on the farm.

Henry Ford built his first automobile—the word, however, was coined many years later—in 1889. It had a two-cylinder opposed motor located under the seat. The transmission was by means of a system of belts and adjustable pulleys with final drive by chain to live rear axle with differential of the same type as he uses today. This original Ford car is one of the chief exhibits in the famous Selden Patent suit. Ford's second car was the foundation of the Cadillac Motor Car Company. Ford soon severed his connection with that concern, however, as his progressive ideas appealed to the financiers as over radical. The Ford Motor Company was formed in 1903 and its growth has been little short of miraculous. Henry Ford is president and the active head as well as the mechanical genius of the concern. He has a happy faculty of surrounding himself with strong aids and in this way he has built up an organization second to none in the business. The Ford output is now 50 runabouts and 5 six-cylinder touring cars per day—the largest output of any automobile concern in the world and one that, only a few months ago, was considered beyond possibility of achievement.



HENRY FORD



It is reported that the Continental Motor Manufacturing Company, of Muskegon, Mich., builder of the Continental motors, recently received an order for 700 motors, the order being worth \$300,000.

The R. H. Smith Manufacturing Company, of Springfield, Mass., has received notice from Washington that its application for registration of the word "Motometer" as its trade mark has been granted.

The Motor Components Company, of Des Moines, Ia., has been reorganized and is now known as the Criterion Motor Company, having a capital stock of \$100,000. W. H. Kitto is the promoter of the company.

The White Company, of Cleveland, has appointed Albert R. Warner as secretary. Mr. Warner has been connected with the White company for several years, being in charge of the various White agencies throughout the country.

The Hay-Berg Motor Car Company has been organized by Robert G. Hayssen and E. M. Sternberg in Milwaukee, Wis. This company is building the Hay-Berg motor cars and its first car will probably be seen in Chicago during the automobile show week.

The Twentieth Century Wheel Company, of Indianapolis, Ind., has perfected plans for manufacturing and the company has been incorporated with \$30,000 capital stock. Those interested are J. E. McGettigan, Leopold Krauss, B. D. Gibson and L. T. Horton.

Several motorists of Evansville, Ind., are preparing to enter the manufacturing business and expect to be ready for active operations within a short time. Preliminary to opening their factory, they have organized the Fellwock Automobile Manufacturing Company, with a capital stock of \$20,000. P. B., W. E. and J. F. Fellwock are the principal stockholders in the company.

At the annual meeting of stockholders of the Kirkham Motor Manufacturing Company, of Bath, N. Y., the directors elected the following officers: President, T. W. Gould; vice-president, M. E. Shannon; secretary, H. W. Bowes; treasurer, C. A. Ellas. These officers and Charles Kirkham, W. L. Dolson and Horace Jones are the members of the board of directors.

Elwood Haynes, of the Haynes Automobile Company, Kokomo, Ind., has figured the striking power of an automobile traveling at every possible speed, as follows: At the speed of 10 miles an hour, at the same velocity and force as if it had fallen 3.3 ft., speed all on; at 20 miles an hour, with the same force as would be attained in a fall of 13.3 ft. and at 30 miles an hour he says, it would take a clear drop of 30 ft. to attain similar force. At 40 miles it would equal a vertical fall of 53 ft. and at a mile-a-minute, the machine, he

declares, would hit with the same force as it would obtain in a clear fall of 120 ft.

F. R. Boynton has been appointed superintendent of the American Locomotive Automobile Company, of Providence, R. I., builders of the American Berliet.

The firm of Hobbie & Martin has been organized in Galesburg, Ill. The concern will do a general automobile business and has secured quarters at 224 South Chambers street.

The Buck & Price Company, 901 Boylston street, Boston, Mass., New England agents for the Rainier cars, has secured the services of Robert J. Schmunk as assistant manager.

W. S. Littell, long associated with Alexander Winton, in the experimental department of the Winton Motor Carriage Company, has charge of the repair department of the Broadway Automobile Company in Seattle, Wash.

The New York branch of the Aerocar Company, makers of the Aerocar, is now under the management of A. M. Robbins who was formerly connected with the C. H. Blomstrom Motor Company and the H. H. Franklin Manufacturing Company.

The Model Garage Company, of Chicago, is located at 645 East 47th street. The company makes a specialty of renting and repairing cars. J. N. Williams is president of the concern; C. Tindolph is vice-president and C. W. Williams is secretary-treasurer.

One of the best equipped and largest garages in the East will be the one now being built in Schenectady, N. Y., for Close Brothers. It will be a two-story fire-proof brick building with basement, fronting 31 ft. on Smith street, and it will be 180 ft. deep. There will be room for storing 200 cars.

A newcomer among the dealers in Indianapolis is Emil J. Buck, formerly with the Buck Auto Company, of Davenport, Ia. Mr. Buck has made connection with the H. E. Hearsey Vehicle Company and will devote his attention to the White steamer, for which the company is the Indiana representative.

The Lozier Motor Company, of Plattsburg, N. Y., recently built an addition 60 by 160 ft. at its works, increasing the assembling and testing facilities materially. The company has also taken a lease on the entire third floor of the Pope building, adjoining their quarters in New York, on Broadway and 55th street.

At the annual meeting of the stockholders of the H. H. Franklin Manufacturing Company, of Syracuse, N. Y., the following directors were elected: H. H. Franklin, E. H. Dann, John Wilkinson, Giles H. Stillwell, Alexander T. Brown, W. C. Lipe and Frank A. Barton; inspectors of election: H. W. Chapin and John G. Barker. The directors elected the following officers: President, H. H. Franklin; vice-president, Giles H. Stillwell; secretary, Frank A. Barton; treasurer, H. Barton Webb. Executive committee: H. H. Franklin, John Wilkinson and Giles H. Stillwell.

The Goodrich tires, which were attached to the Oldsmobile in which Ralph Owen, of Cleveland, and a party made a trip from New York to Florida recently, have established an unusual record. The weight of the car with its passengers and luggage was about 4,000 pounds and the roads over which the tour was made were among the worst in the country. When the party arrived in Jacksonville, on January 9, it was found that the wheel chains, which were new when the tour started, had been completely worn out; while, on the other hand, the tires were found in excellent condition, notwithstanding the 1,500 miles of exceedingly rough and bad roads. As there had been no serious punctures en route, the air with

which they had been inflated in New York was still in the tires on the arrival of the car in Florida.

The John T. Bill Company, of Los Angeles, Cal., has secured the local agency for Firestone tires.

The announcement is made that the Buick Motor Company, of Jackson, Mich., will place a four-cylinder car on the market next August, the vehicle to be listed at \$650. This car is to be built at the plant of the Janney Motor Car Company, which is entirely controlled by the Buick interests.

The new branch office and salesroom of the Autocar Company, of Ardmore, Pa., which was opened last month at 249 North Broad street, Philadelphia, is one of the handsome stores of the Quaker City. The building is three stories, 51 by 200 feet, and is occupied entirely by the Autocar Company.

The Rose Automobile Company, of Spokane, Wash., incorporated for \$50,000, has completed a garage at First avenue and Walnut street at a cost of \$10,000. It is a one-story pressed brick structure, 100 feet square. The floor is level with the street grade, making entrance and exit easy. The company has on hand 26 automobiles, ranging from 20 to 75 horsepower each, and 62 machines have been ordered from the factory. Besides the machines, there is in connection with the garage a repair equipment costing \$5,000 and a tire repair equipment costing \$3,000. There is also a sundries stock

carried valued at \$30,000. These sundries are jobbed throughout Washington, Idaho, Montana and retailed locally.

Robert J. Firestone has been appointed sales manager of the Firestone Tire & Rubber Company, of Akron, O.

The Green Ridge Garage & Motor Car Company is a new concern in Scranton, Pa. F. E. Johnson is the proprietor and manager.

The Perfection Spring Company, of Cleveland, O., which manufactures the McIntyre double-duplex springs recently increased its capital stock from \$20,000 to \$50,000.

Guy R. Pierce and William G. Isbell have organized the firm of Pierce & Isbell to handle the Baker electric line in Chicago. The headquarters of the firm will be at 1413 Michigan avenue.

Plans are being made for the erection of a garage at 204 West Sixth street, St. Paul, Minn., for the Fawkes Auto Company. The building will be 60 by 150 ft., of pressed brick and cut stone and will cost \$15,000.

Roger B. McMullen, formerly manager of the American Motor Car Manufacturers' Association, and more recently connected with the A. O. Smith Company, of Milwaukee, Wis., manufacturer of pressed steel frames, has severed his connection with this concern to become the general manager of the Pennsylvania Rubber Company, of Jeanette, Pa.

An Appreciation

To the Enemy—Our Friend:—

Business is business, we are told. Competition is relentless they say. We like to think competition can be on a high plane—that business principles are not incompatible with gentlemanly conduct. We have just had a demonstration which verifies our contention in this.

The Ford Chicago Branch store and garage was completely gutted by fire early Monday morning—the day of the opening of the Chicago Automobile Show. We were not exhibitors at the Show—our own peculiar conditions dictated otherwise—at least we thought so. Our plans for the week were entirely upset at the last moment.

Here was a chance for "Our friend the enemy" to triumph. We had recently carried on a red hot controversy with one concern—our competition with others has been no less spirited.

Our pleasure and gratitude may, therefore, be better imagined than described when our chief competitors came forward with a spontaneous proffer of aid. The Maxwell-Briscoe Company, represented by Messrs. Maxwell and Briscoe, personally, generously offered us half their store room and even half of their show space in the Coliseum. The R. M. Owen Company were no less liberal and prompt. In short, we were invited to use the show windows and half the floor space of practically every automobile concern on Chicago's Motor Way.

That we had already found new quarters, had gotten ready to take care of our customers at Fourteenth street and Wabash avenue, is aside from the issue. The offer of "our business rivals, our personal friends" touched the spot.

Gentlemen, we appreciate it thoroughly.

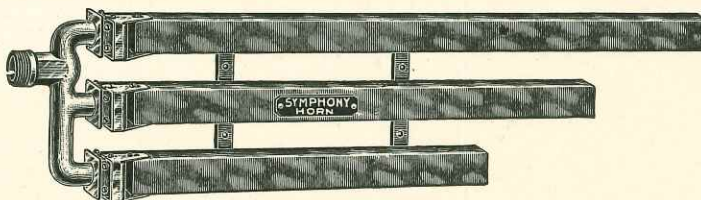
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Warning

All makers and users are notified that we hold exclusive rights to make and sell exhaust blown horns for less money than any other manufacturer in the world.

If your car is a single or double cylinder don't hesitate. We guarantee to give them satisfaction or money returned. Name your car and model, we do the rest. Yours with the Tone and Price

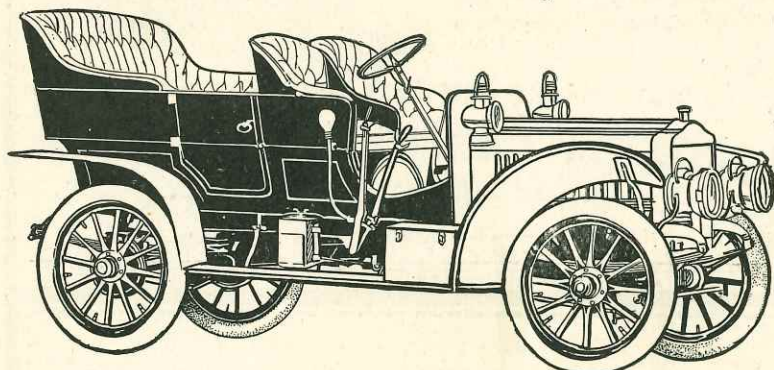
SYMPHONY HORN MFG. CO. 253-255 Jefferson Ave., Detroit, Mich.



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Construction is Three Years Ahead of all Others

Read what MOTOR AGE has to say about unit construction—a principle originated by the MAXWELL:



"UNIT CASE CONSTRUCTION DESTINED TO BE UNIVERSAL"

"A few years ago when the Maxwell car, with its combined crank-case, clutch-case and gear-box—a unit casting—was presented to the public, it created a furore of talk, criticism and ridicule. A little later, when the company exhibited a four-cylinder motor with a combined crank-case and gear-box supported on three point suspension, the storm of approval and disapproval was no less marked. Both constructions were in the cause of alignment—the getting of crank-shaft, clutch-shaft and shafts of gear-box perfectly in line and keeping them in that line by having all of their bearings anchored in the same casting, or in a two part casting with their adjacent ends accurately machined and rigidly belted and locked together. The coming season has in store practically a host of followers of these pioneers."

This is only one point of the Maxwell Doctrine—there are five more. We predict that before many years this doctrine will be the recognized principle of automobile construction. Send for our catalogue—it explains in full the Maxwell Doctrine. You should be familiar with it.

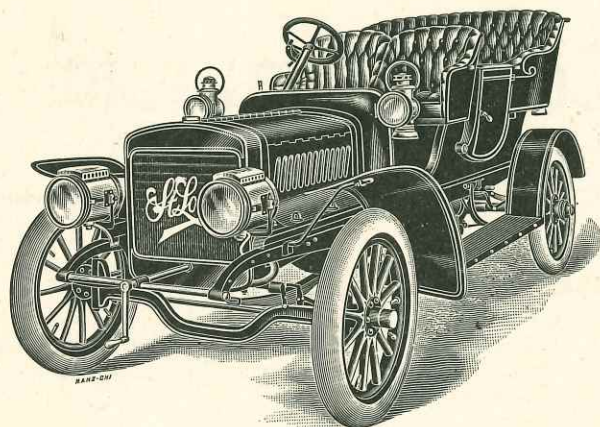
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They are the famous "Rigs that Run,"
of which you have heard so often

Type XVII, 35 H. P. Gentleman's Roadster	\$2250
Type XVIII, 35 H. P. Tonneau	2500
Type XIX, 50 H. P. Tonneau	3000

The factory's money is not spent in expensive stunts with specially built cars. Such advertising draws attention for a while, but it is not giving the buyer a square deal. "St. Louis" cars are not remodeled every year. It is not necessary. "When you build, build well," is the principle adopted by us when our company turned out the first practical autos ever operated in America.

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ADVERTISEMENTS under this head inserted at the rate of 10 cents a line of about six words; no ad. taken for less than 25 cents; express orders, P. O. orders or stamps accepted; cash with order.

For Sale—Fly-wheel and disconnecting clutch for 1903 or 1904 White Touring Car. Portland Garage, Portland, Me. K89

White Steam Car Owner—Free sample throttle piston and valve rod packing. Write R. A. Robbel, 235 Warren Ave., Chicago. B41

For Sale— $4\frac{1}{2} \times 5$ engine, carbureter and pump, \$50; 20 in. x 5 ft. lathe, \$45; $8\frac{1}{2}$ -hp. stationary gasoline engine, \$95. A. Trabold, Johnstown, Pa. B95

For Sale—Complete sets of casting for opposed motors or 4-cylinder vertical, water or air-cooled. Comet Motor Works, 47-49 S. Canal St., Chicago, Ill. B68tf

For Sale—Columbia Motorcycle. In good condition; ran 200 miles; nearly new; also a Thomas Motorcycle. Write for particulars. Jesse Renner, New Midway, Md. B93

For Sale—All parts to build a high-wheeled machine; air-cooled motor $4\frac{1}{2}$ -in. bore, 4-in. stroke. A. M. S., 1551 Michigan Ave., Chicago. Send 4c in stamps for catalogue. B30 tf

For Sale—2 $4\frac{1}{2}$ -in. bore machined twin cylinders, \$10 each; 4 4-cylinder crank shafts \$10 and \$15; front and rear shaft drive axles with wheels, \$45. Woodland Motor Car Co., 3402 Woodland Ave., Cleveland, O. B92

For Sale—1 12-24-hp. 3-cylinder Auto-Marine engine with all accessories, new, \$155; 1 second-hand 8-hp. engine, all accessories, \$60. C. W. Zimmerman, 582 McKinley Ave., Salem, O. B96

We sell any tire on the market. New tires 20 per cent off; second-hand tires 30 to 60 per cent off; tires repaired, any make; any repairs from rim cuts or blowouts to full recovers; all work guaranteed. Chicago Vulcanizing Co., 1457 Michigan Ave., Chicago, Ill. TF

Capital Wanted—I have a splendid opportunity for capital, \$100,000 to \$150,000. Have fully equipped rubber factory and patents on superior automobile tire. Capital will go into product only and show unusually large profit. Principals only. Address "Fire Factory," care Motor Way. B97

Chauffeurs Wanted—Also salesmen and agents everywhere to take orders for "Hercules" Non-Skid Leather Covers, Protectors and Motor Tires. \$300.00 per month easily made. Write to-day for booklet and particulars. McEwen, The Tire Man, 1686 Broadway at Fifty-third St., N. Y. C. B98

For Sale—One 16-inch National kerosene burner with 3 pilots, good as new, \$20; one 18-inch National, new, with 1 extra pilot, \$25; two practically new clincher tires, best made, $30 \times 3\frac{1}{2}$; cheap for cash, wrapped tread; one hand push oiler, new, \$5. Wight Optical Company, 78 Main St., Northampton, Mass. B94

For Sale—1 2-cylinder, 4-horsepower motor-cycle, \$75.00.
1 planetary transmission, \$20.00.
1 2-cylinder opposed 10-h. p. auto engine, new, \$100.00.

4 cylinders machined $4\frac{1}{2} \times 5$, \$25.00.
2 set cylinder castings $6\frac{1}{2} \times 6$, \$35.00.
A. J. Brooks, 1617 Chestnut Ave., Cleveland, O. B91

For Sale—1 1904 Pope, top, headlights, etc., \$700.

1 White Stanhope, wooden wheels, solid tires, \$200.

1 35-hp. Pope-Toledo, good as new, \$2,000.

1 1905 Packard, first-class condition, \$2,000.

1 1905 Stevens-Duryea, \$1,500.

1 1906 Franklin, run 300 miles, good as new, \$1,400.

1 1905 Pope-Toledo, cape top, side curtains and everything complete, \$1,200.

1 1903 Knox Stanhope, top, etc., \$300.

1 Model "A" Cadillac with tonneau, \$295.

1 1905 Cadillac like new, \$595.

1 Model "B" Winton, guaranteed as good as new, \$1,050.

1 1905 Packard car, guaranteed as good as new, \$2,000.

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Halsey Automobile Company,

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Pressed Steel Frame

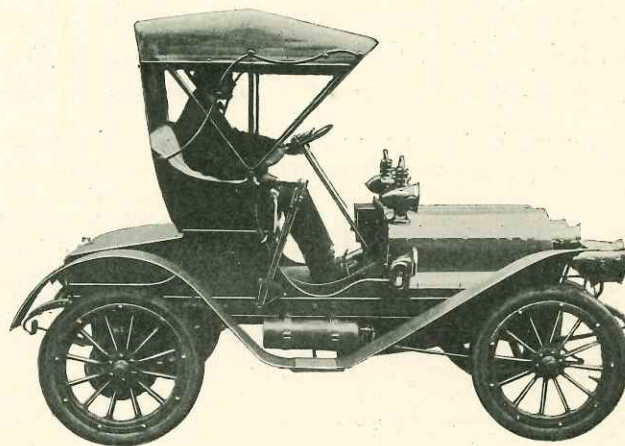
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that is—built for business—you can see that at a glance. Built for the doctor and business man who wants a speedy, reliable, "all-the-year-around" car.

20-24 H. P., Four Cylinder, Air Cooled

motor that is so noiseless and vibrationless you don't realize its running. Shaft drive and new type of transmission that is light, noiseless and "power-saving."

One to Fifty Miles per Hour

on the high speed, and then some, if you want it—a car that brings you through all friendly races victorious. The more you know about motor cars the more you'll appreciate this one when you see it. Write for catalog "M W-2" and see if there's an agent in your territory.

We also build a Motor Delivery and a Motor Truck that will surprise you. Catalog "M W-1" describes them.

The Logan Construction Co.

Chillicothe, Ohio

Be sure to see us at the Chicago Show, February 2-9, Space E-7



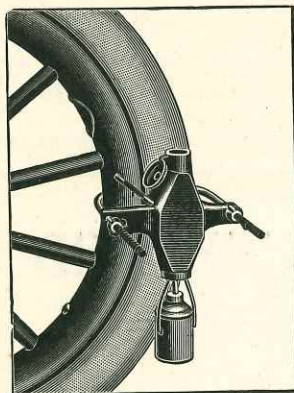
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The Carter patented system of friction transmission used in these cars is guaranteed the simplest, most durable and powerful in use. One lever controls all speeds forward and back. Three years in actual use.

No gears to strip, no clutch to slip, will hold on any hill. Catalogue free.

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PRICE lower than any other fastener.
BEWARE of inferior imitations.
Ask your supply house or write us for free samples and prices.

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Short circuiting and broken insulators--- faults so common to all spark plugs--- are completely obviated in the new

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The Apple Battery Charger is a dynamo right on your automobile or motor boat that keeps the battery always full of "juice." It provides a strong, ever-ready current of absolute evenness, and insures your car or boat against being "put out of business" miles from home. Write today for full information to The Dayton Electrical Mfg. Co., 92 St. Clair St., Dayton, Ohio.



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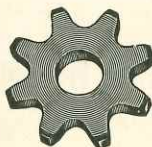
Welch Motor Car Co.

Detroit, Mich. Factory: Pontiac, Mich.

STEEL AND MALLEABLE CASTINGS

True to Pattern, Quality Unsurpassed.
Steel will Harden like Tool Steel.

ACME STEEL & MALLEABLE IRON WORKS
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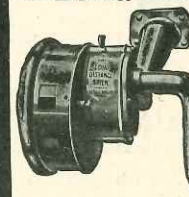


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WRITE FOR OUR BOOKLET

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Why Its Always Heard.

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You may have the roar of

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Beautifully finished in polished

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THE MASON

"The Swiftest and Strongest 2-Cylinder Car in America"

At the first hill-climbing contest of the Iowa Automobile Club held at Des Moines on July 4th, 1906, The Mason won easily against all competitors, including 4-cylinder car listing at \$4,000, and rated at 40 H. P.

Built for any road, and especially for rough and hilly country roads. Exceptionally strong construction. 24 H. P.; 2-cylinder opposed motor; cylinders 5x5; weight, 1,750 lbs.; seats 5. Takes any hill on high gear. Speed, 4 to 40 miles per hour.

PRICE, \$1,250

A postal will bring full information. Let us tell you.

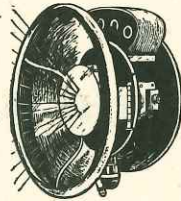
MASON MOTOR CAR CO.

East Fifth and Vine Streets DES MOINES, IOWA

More Light on Motor Lubrication

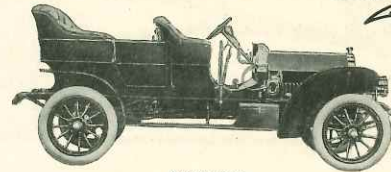
Do you appreciate the vital importance of lubrication in your car? No matter what it cost, friction will shorten its life, increase its care and expense, lessen its efficient service. How to best overcome friction is explained in Dixon's "Green Book"—19 G.

Joseph Dixon Crucible Co.
JERSEY CITY, N. J.



"A Hill Climber Built in the Hills"

The Slide For 1907
AUTOMOBILES



The Chauffeur's choice, the Owner's pride, the Dealer's opportunity. The car for hills, sand roads, and speed.

Specifications

36 h.p. Rutenber motor—120 inch wheel

base—34x4 tires—selective type sliding gear transmission—powerful brakes—high road clearance. Catalog FREE.

WE WILL EXHIBIT—CHICAGO AUTOMOBILE SHOW—Feb. 2d to 9th, Colliseum Annex Space 0-1 Main Floor.

Hustling dealers wanted where we are not represented

Address **The Bartholomew Co.,** 220 Glide Street, Peoria, Ill.
Members American Motor Car Mfrs. Association, New York

ORIENT BUCKBOARD

The Handiest Car on the Market

CALL AND SEE IT

WALTHAM MOTOR CAR CO.

433 Wabash Avenue, Chicago, Ill.

J. H. Toole, Mgr.

Phone, Harrison 4329



"Get the Habit"

and use

TOLEDO IGNITORS

More Power
Less Trouble
More Miles
Less Gasoline

AGENTS WANTED

Toledo Storage Battery Co.
TOLEDO, OHIO

"KENT POCKET METERS"

ARE STANDARD
AND MOST RELIABLE

"DEAD BEAT"
ACCURACY GUARANTEED

Volt Ammeters

0-6 V.; 0-30 A.

Price \$6.00

0-5 V.; 0-20 A.

Price \$6.00



Volt Meters

0-9 V. Price \$4.00

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106 N. 6th ST., PHILADELPHIA

"Artillery Wood Wheels"

Made after an accepted design, best material only being used. Our special design spokes not only give more strength but a natty appearance. Let us have an opportunity of figuring on your requirements.

Empire Wheel Company

J. E. JONES, Prop.

175 South Street, Utica, N. Y.

Jackson Tire Filling and Repairing Co.

We fill defective tires with "Rubberine."

Tires so filled will not run flat or deflate and have all the resiliency of the air cushion. We guarantee this process to stop all tire troubles.

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Michigan Ave. at 15th St., Chicago, Ill.

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THE CAR DE LUXE
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"The Battery With-er-bee"



Sixty-three makers of automobiles and motor boats adopted the Witherbee Storage Battery Igniter because tests showed it to produce the biggest, hottest sparks and to run an average of over 1,200 miles without recharging.

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RU=GO

A positive tire preserver. Will prevent tires from chipping. A harmless vegetable compound that strengthens and toughens the fibre.

Saves tires from destruction by sharp stones, glass and other obstructions.

Makes tires wear twice as long as ordinarily.

For sale by all Auto Supply Houses

Send four cents in stamps for sample

AGENTS WANTED

ELY G. INMAN

Chicago, Ill.

LARGEST AUTOMOBILE SUPPLY HOUSE IN AMERICA

The following taken from June issue of Cycle and Auto Trade Journal:

"The 1906 catalogue of Chas. E. Miller, 97-101 Reade St., New York City, is naturally the most complete he has ever issued, and describes practically every standard automobile part and accessory on the market. The 1906 catalogue, like previous issues, contains a large number of illustrations of goods which are handled exclusively by Mr. Miller, and as he is careful to list only things that have proved worthy, his is a safe catalogue to buy from. The various goods which he handles are carried in stock at his main office in New York, and also at his six branches throughout the country. This catalogue is a big one, containing 200 pages and cover.

Automobile catalogue No. 8 is held as a book of reference by automobilists and will be mailed upon request

CHARLES E. MILLER

Manufacturer, Jobber, Exporter and Importer

Home Office: 97-99-101 Reade St., New York City

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New York City—924 Eighth Ave.	Boston, Mass.—202-204 Columbus Ave.
Philadelphia, Pa.—318-320 N. Broad St.	Cleveland, O.—406 Erie St.
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Manufacturers' Agents

Witherbee Batteries, Spitfire Plugs,
Autocoils, Soot Proof Plugs,
Continental Tires, Electric Horns,
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Jobbers of Everything for the Motor Car

267 Jefferson Ave. - - Detroit, Mich.

AUTO LISTS

Complete Lists of Auto Owners
and Garages in every state

New names daily

MOTOR DIRECTORIES CO.

108 Fulton Street New York City

Phone 497 John

JACKSON

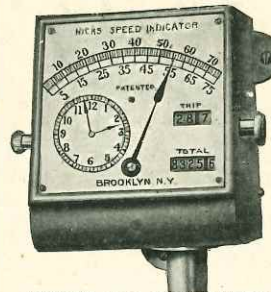
CARS FIND

"No Sand Too Deep"
"No Hill Too Steep"

Jackson Automobile Co.

JACKSON, MICH.

"Peer of Them All"



HICKS Speed Indicator

Four Recorders on one dial,
Speed Indicator, Trip and Total
Odometer, and Watch.

Simple and durable construction.

Accurate at all speeds.

Absolutely guaranteed.

You could not get one half as
good if you paid double the price.

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PRICE \$50 COMPLETE

HICKS SPEED INDICATOR COMPANY

922 Union St., Brooklyn, N. Y.



Ross Fluid Level Indicator For Gasoline Tanks

Martin Reserve
and
Shut-off Valve



THE TURNER BRASS WORKS

Franklin & Michigan Streets, Chicago, Ill.

High Grade Autos

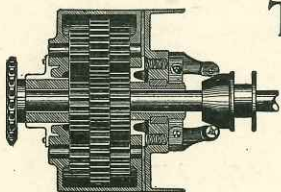
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Now is the time to get a bargain in an
automobile. We have a number of high
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The Automobile Exchange

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Chicago Agency, 302-304 Wabash Ave.

Garage, 1218-1220 Sheridan Road, near Sheridan

Telephone Lake View 1197

Elevated Station

Thomas B. Jeffery Co.

Kenosha, Wis.



MICHIGAN IGNITER

The Greatest Efficiency
The Longest Life

From one to two thousand miles
on each charge. Built to stand
the strain of Automobile usage.

The Michigan Battery is the re-
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Germany, France and the United
States. Let us show you the re-
sults.

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NON-CORROSIVE PACKAGE

Phone Douglas 4097

Full Line of Supplies

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Second Hand Machines Bought and Sold

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CHICAGO, ILL.

We equip our vehicles with bodies to suit your special requirements.
PRICE, - \$2000



Hotel
Bus, 12-
passenger

The Rapid Idea

MOTOR VEHICLE CO.

"A car for every Commercial purpose"

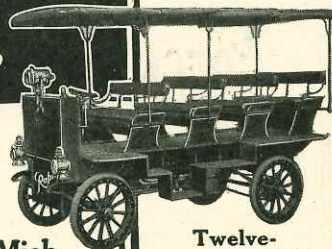
NO matter what your delivery problem is, there is a Rapid Motor Car that will solve it. Each car is built to carry a maximum load at a safe, practical speed, and at a minimum expenditure of money and energy. It can work 24 hours a day, if you wish, without tiring, and it takes hills and grades with scarcely any noticeable reduction of speed. If you want a light or heavy delivery wagon, a light or heavy truck, a bus or club brake, or a large sight-seeing car, write me for particulars, and I will tell you all about the car you should have. CATALOGUE FREE.

A. P. HENRY, Sales Manager

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Pontiac, Mich.

Every car guaranteed for one year.
PRICE, - \$1800



Twelve-
passenger Sight-
Seeing Car.

Pressed Steel Frames

Automobile Parts



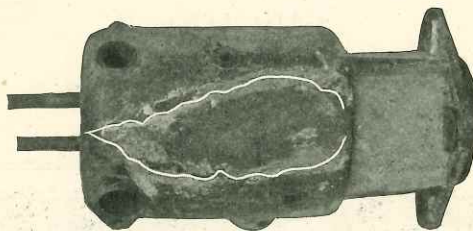
A. O. Smith Company

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Save Your Cracked Cylinders

Don't throw them into the scrap heap for we can braze them and make them as good as new.

This is not an experiment for we have repaired 15,000 pieces of cast iron for automobilists and manufacturers.



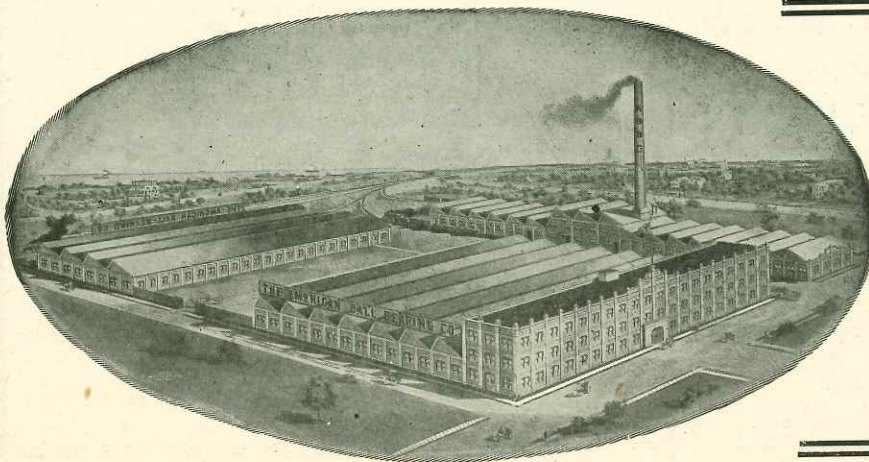
Automobilists Look Into This Work and Save Money

Besides cylinders we braze all metal parts of a car. Manufacturers, we can braze machinery. Write us for a list of the concerns for whom we have done repair work.

Write For Information

National Brazing Company

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The Output of COMPLETE FRONT and REAR AUTOMOBILE AXLES of this plant exceeds the capacity of all competition combined.

THE
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McCORD

Force Feed Lubricator

"The Mark of a Good Motor Car"

RADIATORS CARBURETORS

McKIM COPPER

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McCord & Company

1405-80 Old Colony Bldg.

CHICAGO

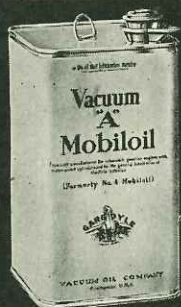
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Makes Easy Motoring

The only oil which can be relied upon to take care of your engine under all conditions is Mobiloil. Whatever the make of your automobile or the kind of engine which propels it—there is a special grade of



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for it. Mobiloil in its five different grades is scientifically correct—its use completely eliminates all lubrication troubles.

Send for booklet which tells the proper oil for your automobile. It's free. Mobiloil is sold by dealers everywhere in barrels and cans of varying capacities.

MANUFACTURED BY
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TIRE



GUARANTEED
FOR
5,000 MILES
RIDING

It is merely a matter of common sense to believe that the tire that is sold with the strongest guarantee must be the best.

Write for copy of guarantee, stating what size tire you are using
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Gasoline and Electric

POPE CARS

\$500 TO \$6000

"Go-As-Far-As-You-Like"

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1317 Michigan Avenue

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The

 IMPROVED PERFECTED
1907 MOTOR
 AWAY AHEAD OF ANYTHING YET

While retaining all the well known, valuable features of the Henry Trebert and BROWNELL-TREBERT MOTORS, many important improvements and valuable new features have been added, making this MOTOR really ideal.

DISTINCTIVE FEATURES:—Specially designed and ample cooling system,—no heating. Automatic lubrication of cylinders and all bearings,—no cutting. Accessibility of all parts. Valves can be removed for grinding or exchange in one minute's time. Compact and neat appearance. Clean and quick in action. Enormous power for size of cylinders and weight of Motor, and—but, an ad. can't justly describe it. Let us send you a catalogue.

The 1907 line of  MOTORS are furnished in sizes from 10 H. P. to 150 H. P. in 2, 4, 6 and 8 cylinders.

Our 1907 Transmission has been designed after years of experience constructing Transmissions for Commercial as well as Pleasure Vehicles. Superior workmanship and material—Timken Roller Bearings all around—All parts properly proportioned. They work smoothly and stand the strain. Give us a chance to prove it. Write for special 1907 information.

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Insure Your Motor

Against wear and carbon troubles by using

"INVADER" OIL

THE OIL THAT GRAPHITIZES FOR ALL EXPLODING ENGINES

Two Grades
 Light and
 Medium
 Heavy



You Name
 the Car
 We'll Name
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INVADER SEMI-FLUID COMPOUND
 A thickened oil for transmissions

INVADER LUBRICATING COMPOUND
 For Compression Cups

Ask your dealer or write. Made only by

Chas. F. Kellom & Co.

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Branch Store: 648 N. Broad St., Philadelphia
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Baldwin Improved Spring Recoil Check

is superior to any supplementary spring control device made, because it has qualities not possessed by others, and especially one feature, to-wit:



A graded control over the re-coiling springs. This control increases in proportion to the effort on the springs. It is least at the initiative and the highest power is exerted at the final action where it is needed. This insures easy riding over smooth roads as well as rough roads.

Made to fit all kinds of cars. No oiling or adjusting necessary.

Price \$60.00 per
 Set of Four

SEND FOR OUR CIRCULAR FOR FULLER DESCRIPTION

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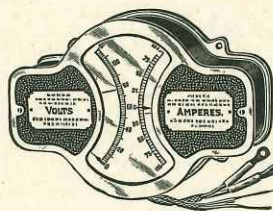
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SPACE AT CHICAGO SHOW NO. 50

H. V. GREENWOOD, 166 Lake St., Chicago, Ill.)
 UTILITY CO., 332 Broadway, New York, N. Y. } Agents.
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WESTON ELECTRICAL INSTRUMENT CO.

MANUFACTURERS OF



Combination Volt and Ammeter,
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Electrical Measuring Instruments

FOR USE IN

ELECTRICAL CARRIAGES AND IN CHARGING STATIONS

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MAIN OFFICE AND WORKS

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N. Y. Office, 74 Cortlandt Street



Pre-eminently the Winter Car

as evidenced by its trip through a terrific mountain blizzard in the New York Motor Club's Economy Run. Through the Berkshires, over the famous "Jacob's Ladder", snow two feet deep, with a temperature fifteen degrees below freezing, wind so high as to almost blind driver and passengers, for 150 miles, but the plucky car passed through it undaunted and without stopping for a repair or an adjustment in a distance of 453 miles, and driven all the way with a full load of passen-

gers. Rather a convincing argument, is it not? Premier full elliptic springs provide the means which make this car the most comfortable riding and easiest running, with less wear and shock to mechanism, of any manufactured. *More miles of rough roads can be covered in a day than with any other car.* Graceful, handsome, economical, durable, quiet. Select a trip for one of our representatives to cover, and convince yourself of Premier superiority. Send for Catalog Z.

Premier Motor Manufacturing Company, Indianapolis, Ind., U. S. A.

Members A. M. C. M. A.

WILL EXHIBIT AT SPACE C 2, MAIN FLOOR, COLISEUM

TRUFFAULT-HARTFORD
SHOCK ABSORBER

RUFF ROAD
Get a TRUFFAULT-HARTFORD
SHOCK ABSORBER
67 Vestry Street New York

The Pioneer The Best
Automatically lubricated
Guaranteed 10,000 miles
without readjustment

Adopted by: Pierce Great Arrow, Locomobile, Matheson, Studebaker, Stevens-Duryea, Aerocar, Napier, Frontenac, Lane, Conover, Marmon, Peugeot, Gobron-Brillie, Rossel and Brasier.

Hartford Suspension Co.
E. V. HARTFORD, President.
67 VESTRY ST., NEW YORK
Exhibit at all shows.

**The Why
of the
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Coil**

Two cores instead of one means short primary and secondary windings—no loss of energy in the coils—the full voltage being delivered to the vibrator. They mean 4-times-greater magnetic force—the use of a strong spring and light armature, a quick, hot spark at that point of compression which produces full force and power.

"A mile's trial will prove it all." Therefore we make the following offer to you to-day. Don't doubt. Just write.

30 Days' Free Trial

We will send the Duplex Coil, express prepaid, to any manufacturer or responsible automobile owner on its merits. Put this coil on any car in place of any other coil on the market, and if, after a reasonable trial, the Duplex Coil does not show greater efficiency, does not give a hotter spark, does not increase the power of your car, does not use less current for a given mileage and is not more generally satisfactory than any coil on the market, remove it from the car and return it to us at our expense, and the test will have cost you nothing.

If the coil bears out our claims, after a most rigorous trial, then pay us the small sum which we ask.

Write us to-day on your business stationery, and a Duplex Coil will be sent you at once.

THE DUPLEX COIL CO.
Station C Fond du Lac, Wisconsin

*The Mark of
MERIT*

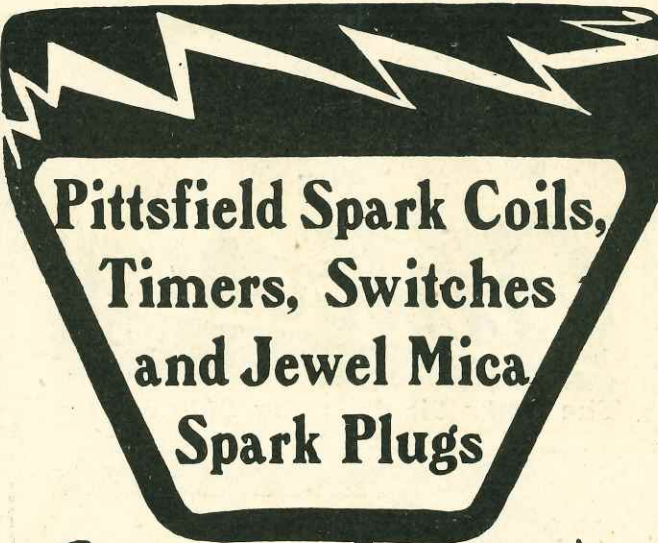
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Harburg-Wien Tires

On the rear wheels of a heavy Panhard limousine in New York City a pair of Harburg-Wien tires have been in use for 6000 miles. They show very little wear, the grooves of the tread being still visible. They have given no trouble and have required no attention.

Harburg-Wien rubber compound combined with Harburg-Wien workmanship has developed what is practically a new kind of tire of wonderful resiliency and greatly increased resistance to puncture.

Harburg Tire Co.
232 West 58th St., N. Y.
Distributors for North America.



**Pittsfield Spark Coils,
Timers, Switches
and Jewel Mica
Spark Plugs**

Enough Said

PITTSFIELD SPARK COIL CO.
Pittsfield, :: :: Mass.
WESTERN DISTRIBUTING AGENTS
Excelsior Supply Co., 233 Randolph Street, Chicago

MR. GARAGE MANAGER

WE PAY CASH

IF you can't spare the time to look after this little matter, you certainly have an assistant, or know of some chauffeur who is not doing much these winter days who would like to earn a good salary for the next two months.

¶ We want a hustling agent in every city in the United States, where ten automobiles are used.

¶ He will have no trouble in securing subscriptions from 50% of the owners. It's no trick at all to take a year's order for the monthly Motor Way, at \$1.00 per year. Write to-day for full particulars.

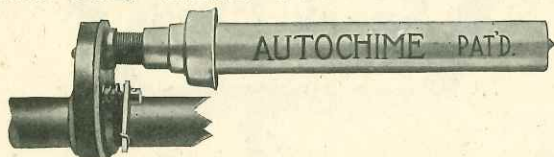
THE MOTOR WAY

45 Plymouth Ct., Chicago

The
Great Demand
for

The Autochime
Pat. Nos. 821,358 and 797,681

The Only Single Tube Chime Horn



IS STEADILY INCREASING

This is due to its smart appearance, small size, correct design, durability, and also to the fact that all users recommend it to their friends as the

The Only Practical Signal

It is imitated—but in appearance only. No other horn produces the deep, rich, road-clearing tones, or is built to stand every-day service.

The Autochime is recommended and sold by the best dealers and supply houses. If offered imitations write us.

Gray-Hawley Mfg. Co.
Detroit, Michigan

Swinehart Tire Reputation

is firmly established among more than 6,000 old patrons. It has proved five times the endurance and mileage of the best pneumatics. That's why old users could never be induced to use any other. That is also why dealers prefer to push pneumatic tires. Write for our new



Fits Standard Clincher Rims

booklet "In Commendation," containing more than 100 letters from users, with 1 to 4 years experience on Swinehart's.

**The Swinehart Clincher
Tire & Rubber Co.**

AKRON, OHIO

CHICAGO

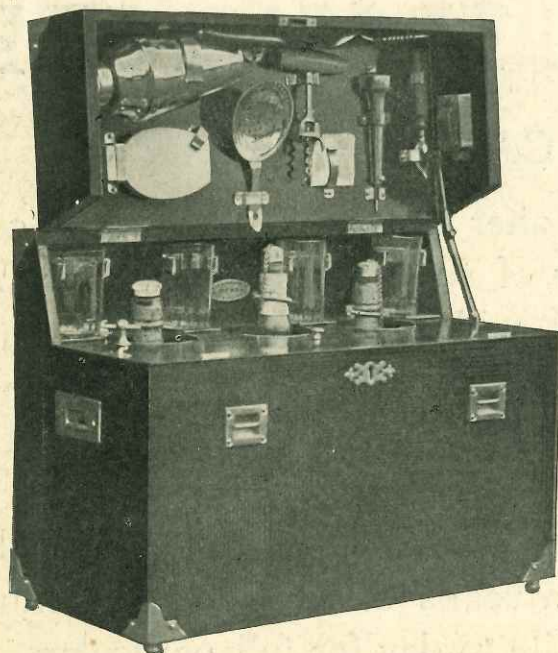
NEW YORK

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BOSTON

DETROIT

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Have you ever realized the joys of a cold bottle on a hot day? If you have, then you know what the pleasure is.

THE AUTO BUFFET

is a fully equipped ice box which retains ice for fifteen hours and cold at 36 degrees.

It is strongly constructed—contains all the accessories of a first class cafe—is lightly but strongly built, handsomely finished and is attached to the running board of a car and used as an extra seat. We will finish a box in the color of your car.

For full information, write

The Wotherspoon Buffet Co.

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145 E. 42nd Street, NEW YORK, N. Y.

Monogram Oil

Gives

Any

Engine

A Better Chance

Best for your engine, because refined better; secures easiest action with least trouble in highest speed machines; used by winner of Vanderbilt Cup.

Get it; 5000 supply houses carry it

Columbia Lubricants Co. of New York
78 Broad Street, New York

The Automobile Supply Co.

1339 Michigan Blvd., Chicago

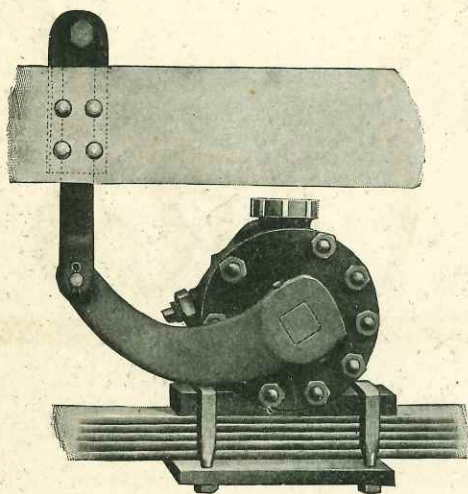
Forgings, Engines, Transmissions, Lamps,
Horns, Clothing and all kinds of Supplies
and Accessories for Manufacturers, Dealers
Repair Men and Automobile Owners.

SEND FOR OUR CATALOGUE

At the Show look for HOTCHKIN AND HIS Anti-Jolt Device

HE came near having a booth on the roof, but managed to keep himself down to the Coliseum Annex, second floor (Space No. 91) at the Chicago Show. It's worth overcoming a little of the force of gravity to see the Hotchkin Anti-Jolt Device eliminate jolts. *Eliminate,*

friend—not absorb—*remember* that, when you get to the shows, and come and see how it does it, and let us show you why the Hotchkin is mechanically right, while others are wrong; its really a highly interesting device. Ask for



A piston working in a circular cylinder, alternately forcing glycerin through a large check valve and a small needle valve, is the principle of operation.

On the downward or compressive motion the glycerin passes through the check valve without resistance and returns to the cylinder, allowing free play to the springs.

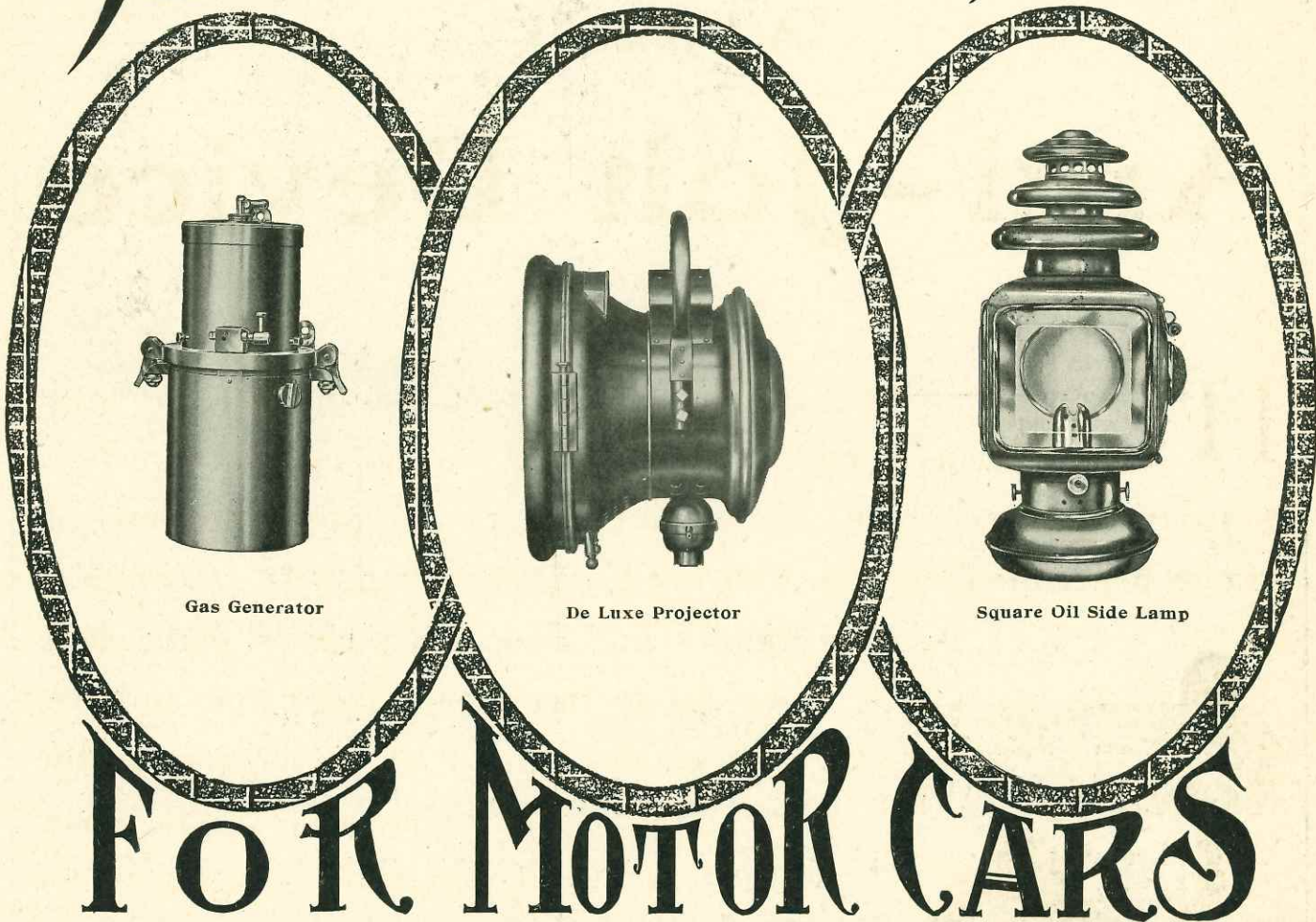
The slightest pressure on the recoil closes the check valve, the piston reverses and forces the glycerin through the needle valve, which is **regulated from the outside** to the exact pressure required to check the recoil and bring the car back to its normal position, slowly, without jar or jolt. Once regulated, they require no further attention

HOTCHKIN The Anti-Jolt Man

Remember, Space No. 91, Chicago—
better write it down.

P. M. Hotchkin, 1259 Michigan Boulevard, Chicago

SOLARS



Gas Generator

De Luxe Projector

Square Oil Side Lamp

FOR MOTOR CARS

In the minds of motor car drivers, Solars are inseparably linked with economical lighting efficiency.

There is not one superfluous part, though nothing is omitted that can promote capable working power.

Scientific in principle, simple in construction, nothing intricate in their operation, the complicated disorders and failure to "work" common with other equipment is in Solars wholly avoided.

Our 1907 Catalogue describes the entire line, both lamps and generators. It's free — Want one? We exhibit at the Chicago Show, Coliseum, February 2d to 9th.

Badger Brass Mfg. Co., Kenosha, Wis.

EASTERN BRANCH, 11th AVENUE, 36th to 37th STREETS, NEW YORK CITY

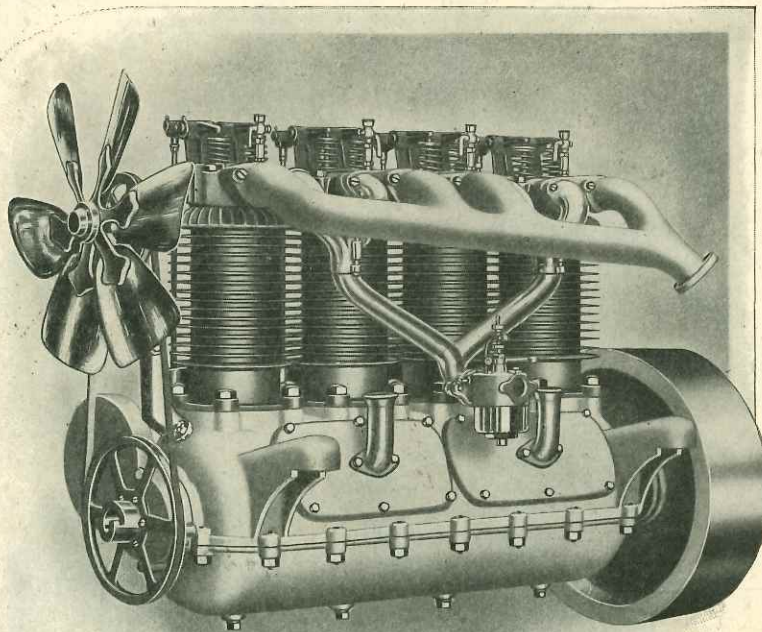
Wherever You Find a "Carrico"

you hear words of praise. It's because they "do the work." Up hill—down hill or on the level.

Cornish-Friedberg Motor Car Company, Inc.
DISTRIBUTORS OF
THE AEROCAR
1233 MICHIGAN AVENUE
Chicago, Ill., Jan. 19, '07

SPEED CHANGING PULLEY CO.
Indianapolis, Ind.

Gentlemen:—Yours of even date to hand and I note what you say in regard to your engine, and in reply will say I cannot find words to express my praise for the Carrico engine. It certainly is a wonderful engine, and is pulling twice as much load as should be put on. I am pulling a 2850 pound rig up and down hills on high speed, 20% grades, and my engine certainly does the work properly. I should certainly never use anything but a Carrico engine. Yours very truly,
LOU W. FRIEDBERG

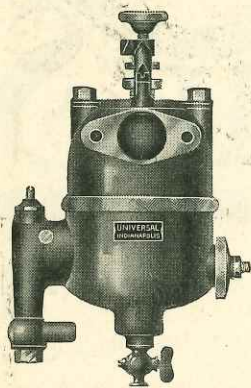


Let us send you more facts about this wonderful 20-24 h. p. engine. It's air cooled—no water pipes to leak, burst or freeze, and works the same with the temperature below zero or above 100.

The "Carrico" works 365 days a year

AMERICA'S GREATEST CARBURETOR

The 1907 Model C "Universal"



When your engine is equipped with the reliable "UNIVERSAL" you never have any carburetor troubles. Its action is sure. There is always a perfect level of gasoline at the spray nozzle. No clogging. No troubles of any kind and you save 33 per cent of your gasoline bill. We are so positive that we have the best Carburetor that we will return your money if you are not satisfied.

See us at the Chicago Show—Space FF, Main Floor, Armory

SPEED CHANGING PULLEY COMPANY

Washington Street, INDIANAPOLIS, IND.



Most of the accidents that befall automobilists are caused by skidding, gliding and inability to control the course of the car.

At curves, sharp turns, sloping portions of the road and on smooth surfaces the rubber tires of the car going at even moderate speed are likely to slide or skid, cause the car to collide with some other car, run against a curb, a tree, a passing team,

over an embankment or in the way of an approaching railway train.

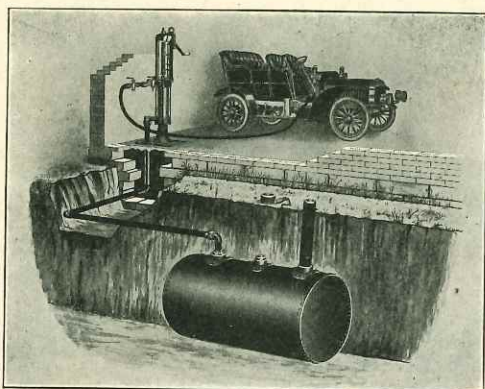
Other accidents and long tedious, uncomfortable and costly delays are caused by punctures.

The "Woodworth Detachable Tread" prevents skidding, makes the course of the car more controllable, protects the tire against puncture, rough roads and hard usage; makes it last two to three times longer, saves more than half the tire bill, makes automobiling safer, more comfortable and less expensive; protects the car against accidents, damage and perhaps demolition, and its occupants against dangerous if not fatal injuries.

Write for booklet "SAFE AND SANE AUTOMOBILING."

Leather Tire Goods Co.

Newton Upper Falls, Mass.



CUT No. 41 LONG DISTANCE
Pump in building, tank in ground.

If the Pittsburg Garage mentioned below had had above outfit, there would have been no fire.

EVEN the most experienced are careless in the handling of gasoline. Hardly a week passes that the news of a fire or explosion does not come to hand. In a garage where great care should be taken extreme carelessness seems to exist. Only a few days ago a large motor car concern at Pittsburg suffered a bad and costly fire because an employe dropped an electric light globe into a pool of gasoline. In the first place the pool of gasoline should not have been where it was, and in the second place the lamp globe should have been protected. Operators of motor car factories and garages might take time to reason out that a little precaution would be cheaper in the end, inasmuch as it would undoubtedly be the means of reducing fire insurance premiums and thereby form a source of profit. At this stage and age of the motor car industry, with the knowledge of the dangers of gasoline, there is little excuse for having an explosion or a fire. Anything of this kind comes under the heading of rank carelessness. MOTOR AGE

This would never
have happened with

a Bowser

*The Standard Garage Equipment
for Gasolene Storage*

**WITH A BOWSER THERE
WOULD NOT HAVE BEEN
A DROP OF GASOLENE
ON THE FLOOR**

**PRECAUTION - IE - THE
BOWSER-THE STANDARD
GARAGE EQUIPMENT FOR
GASOLENE STORAGE**

**THERE IS ABSOLUTELY
NO EXCUSE FOR THE
BOWSER WILL PREVENT IT**

When the garage referred to is rebuilt a Bowser Long Distance Outfit for gasolene will be installed. There's a lesson in that for you.

It's wiser to buy a Bowser before the fire than after because:

The entire outfit is especially constructed so as to be absolutely safe.

The tank is buried underground—it's a heavy steel tank riveted and soldered—a tank that will last a lifetime.

The pump is made entirely of metal and practically indestructible—it is self-measuring, that is, any desired quantity can be drawn and measured directly into the reservoir of the car—so there is no overflow, no drip, no gasolene returning through an unprotected pipe back to the tank—all the gasolene is in the tank or in the car.

The above are the reasons for the exclusive use of the Bowser for gasolene in cities like New York, Boston, Chicago and San Francisco—cities in which the insurance requirements are the most rigid.

Ask for a demonstration at the Chicago Show, Space 7-8-9, Coliseum Gallery.

SEND FOR CATALOGUE F

S. F. Bowser & Co., Inc.
FORT WAYNE, INDIANA

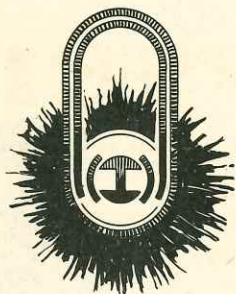
255 Atlantic Avenue
Boston, Mass.

66-68 Frazer Avenue
Toronto, Canada

299 Broadway
New York City

BOSCH
IGNITION

RESULTS THAT COUNT!



BOSCH IGNITION



victorious all over the world

All big Races of 1906 won by Bosch-Magnetos

United States VANDERBILT CUP RACE: Bosch-Ignition

All cars finishing had

France GRAND PRIX RACE: The first 5 cars had Bosch-Ignition

COUPE DU MATIN was won by

Germany HERKOMER COMPETITION Bosch-Ignition

was won by

Italy COPPA D'ORO: The first 5 cars had Bosch-Ignition

TARGA FLORIO: All cars finishing had

Belgium CIRCUIT DES ARDENNES: Bosch-Ignition

All 10 cars entered had

England TOURIST TROPHY RACE Bosch-Ignition

was won by

Austria SEMMERING HILL CLIMB Bosch-Ignition

was won by

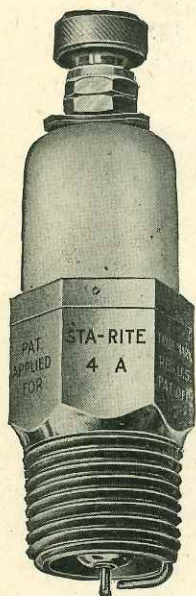
ROBERT BOSCH NEW YORK INC. 1947 BROADWAY

Bosch-Magnetos are in every point identical with Simms-Bosch-Magnetos under which name the French and English Representatives of our Parent House at Stuttgart, Germany, are selling our Magnetos

STA-RITE

Stays Right the Longest

Trade Mark Reg. U. S. Patent Office.



NO. 4-A
Double Porcelain Separable shell for cleaning. At dealers, or sent prepaid at \$1.25.

WERE RIGHTLY NAMED IN 1902

- ¶ Double porcelains do not break, because inner heated porcelain tube and outer porcelain cap have their own contraction and expansion.
- ¶ Single porcelain plugs are handicapped because contraction and expansion is not uniform and tube either breaks or leaks.
- ¶ Sta-Rite tubes have ground joints and cannot leak.
- ¶ Tension springs prevent parts loosening.
- ¶ No broken bolt heads. They are turned from solid Bessemer steel rod.
- ¶ Sta-Rite air spaces and glazed insulating surfaces permit perfect ignition in oil and soot.



NO. 32-A
Indestructible Mica Two years old, wrapped inner core. Head pinned to solid bolt. Easily separable for cleaning. At dealers, or sent prepaid at \$1.50.

Start Right and You'll Stay Right

- ¶ When you buy Sta-Rites you may be sure of obtaining the **Genuine** by noting these words on the plug and box, "Sta-Rite" and size number, "Patent Applied For" and "Trade Mark, Reg. U. S. Pat. Off."
- ¶ On request we will send catalogue of 48 sizes and 25c 6-inch rule free, and prices on spark coils and timers.

THE R. E. HARDY CO.

Incorporated 1900

86 Watts Street

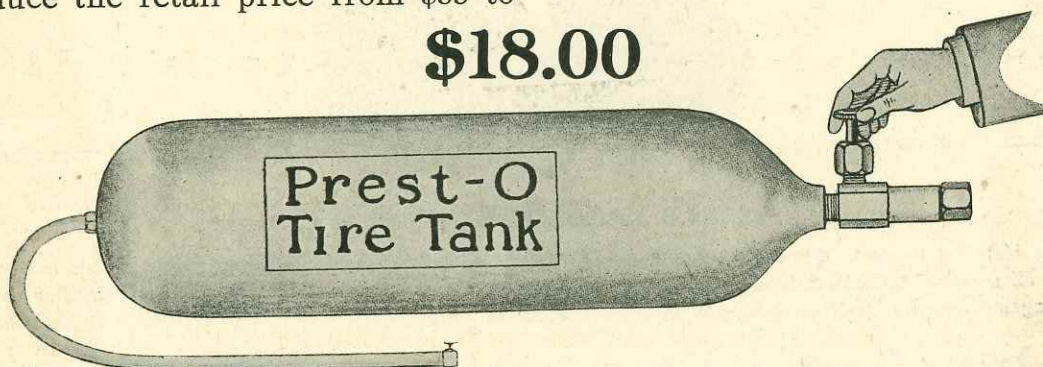
New York City

THE PREST-O TIRE TANK

is the greatest labor-saving device ever invented
for automobilists

AFTER one year's experience with 500 tire tanks in the hands of users, we are prepared to offer for 1907 some splendid improvements in mechanical construction, and in making in ten thousand lots we are able to reduce the retail price from \$35 to

\$18.00



This little tire tank is made of seamless steel, handsomely copper-plated, and furnished complete with hose and tire connection ready to attach to valve of tire and commence work.

The Prest-O Tire Tank is filled with liquid hydrogen and carbonic acid gas, and acts as a positive preservative of rubber.

Our tank contains five pounds of liquid which transforms to gas as the pressure is released, and before entering the tire, and one charge will pump to any desired pressure, as follows:

15	.	.	.	.	.	34x4½ tires
20	.	.	.	.	.	32x4
25	.	.	.	.	.	30x3½
30	.	.	.	.	.	30x3

When empty, tank can be exchanged for full one with any of our four hundred agents in the United States, Canada and Mexico.

Recharge price in New York City, Boston, Chicago and Indianapolis is \$2.00.

In cities near New York, Boston, Chicago and Indianapolis, a slight advance over this price will be made by our agents to cover expressage or freight charges.

NOTE—Owners who have our last year's style can trade them in to us for our newest improved tank, filled, and five dollars difference.

We guarantee Prest-O Tire Tanks to give satisfaction or money refunded.

We can make deliveries promptly after February 15th.

The Prest-O-Lite Company

NEW YORK
1904 Broadway

BOSTON
541 Tremont

SAN FRANCISCO
Point Richmond

INDIANAPOLIS
22-24 S. East

TORONTO
6 King St. W.

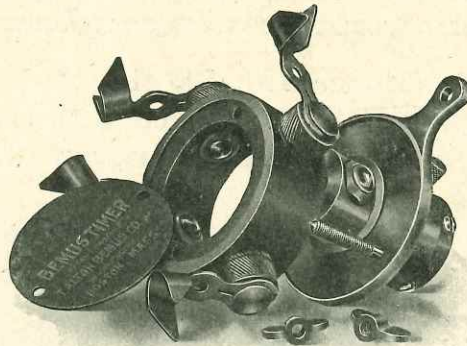
YOUR SPARK

GUARANTEED

BEMUS TWIN-BALL TIMER

ACCURATE

POSITIVE



SIMPLE

ADJUSTABLE

ORIGINAL FEATURES

¶ Twin (double) Ball Contact. ¶ Foreign matter between contact points impossible. ¶ Spring pressed double ball contacts does away with all inertia. ¶ Contacts being made of Standard Steel balls are easily renewable. ¶ Its construction enables us to guarantee against Irregular Ignition making it Positively Accurate. ¶ IT WILL NOT SHORT CIRCUIT. PRICES RIGHT.

T. Alton Bemus Co., Inc., 133 Oliver St., Boston, Mass.

BUYERS' DIRECTORY of ADVERTISERS

FOR LOCATION OF ADVERTISEMENTS SEE ALPHABETICAL INDEX—LAST PAGE

Advertisers Must See That Their Products are Properly Listed

Aluminum Castings.
Turner Brass Wks., 65 Mich. St., Chgo.

Ammeters and Voltmeters.
Automobl. Sup. Co., 1339 Mich. av., Chg.
Atwater-Kent Mfg. Co., 117 N. Sixth
St., Philadelphia, Pa.

Automobile Equipment Co., 263 Jefferson
ave., Detroit, Mich.
Franco-American Auto Supply Co., 1404
Michigan av., Chicago.
Western Electrical Instrument Co., Wa-
verly Park, Newark, N. J.

Anti-Skids.
Healy Leath. Tire Co., 88 Gold st., N. Y.
Leather Tire Goods Co., Newton Upper
Falls, Mass.

Aprons.
Automobile Equipment Co., 263 Jeffer-
son ave., Detroit, Mich.

Automobile Cleaners.
Smith, D. B. & Co., Utica, N. Y.

Automobile Parts.
Automobl. Sup. Co., 1339 Mich. av., Chg.
Borbein Auto Co., 2109 N. 9th st., St. L.
Miller, Chas. E., 97-101 Reade st., N. Y.
Smith Co., A. O., Milwaukee, Wis.

Axles.
American Ball Bearing Co., Seward ave.
and L. S. & M. S. Ry., Cleveland, O.
Borbein Auto Co., St. Louis, Mo.
City Machine Co., Detroit, Mich.
Miller, Chas. E., 97-101 Reade St., N. Y.
Smith Co., A. O., Milwaukee, Wis.
Timken Roller Bg. Axle Co., Canton, O.

Ball Bearings.
American Ball Bearing Co., Cleveland.

Battery Boxes.
Hayes Mfg. Co., Detroit, Mich.

Battery Connections.
Pittsfield Spark Coil Co., Pitts'd, Mass.

Bodies.
Borbein Auto Co., St. Louis, Mo.
Quinby, J. M. & Co., Newark, N. J.

Brakes.
Timken Roller Bg. Axle Co., Canton, O.
Smith Co., A. O., Milwaukee, Wis.

Brake Locks.
Turner Brass Wks., 65 Mich. St., Chgo.

Braziers.
Turner Brass Works, Franklin and
Michigan sts., Chicago.

Brazing Compound.
Dixon, Jos., Crucible Co., Jersey City.

Buckets.
Goodrich, B. F. Co., Akron, O.

Buffet.
Wotherspoon Buffet Co., 145 E. 42d st.,
N. Y. City.

Burners.
Automobile Equipment Co., 263 Jeffer-
son ave., Detroit, Mich.
Automobl. Sup. Co., 1339 Mich. av., Chg.
Post & Lester Co., Hartford, Conn.
Turner Brass Works, Franklin and
Michigan sts., Chicago.

Caps.
Automobile Equipment Co., 263 Jeffer-
son ave., Detroit, Mich.
Automobl. Sup. Co., 1339 Mich. av., Chg.
Franco-American Auto Supply Co., 1404
Michigan av., Chicago.
Miller, Chas. E., 97-101 Reade st., N. Y.
Post & Lester Co., Hartford, Conn.

Carburetors.
Byrne, Kingston & Co., Kokomo, Ind.
McCord & Co., 1400 Old Colony bl., Chg.
Speed Changing Pulley Co., 750 E.
Washington st., Indianapolis, Ind.
Turner Brass Works, Franklin and
Michigan sts., Chicago.

Cases—(Engines, Gear and Chain).
Automobile Equipm't Co., Detroit, Mich.

Castings.
Acme Steel & Malleable Iron Works, 245
Military road, Buffalo, N. Y.
McCord & Co., 1400 Old Col'y blg., Chg.
Turner Brass Works, Franklin and
Michigan sts., Chicago.

Chains.
Baldwin Chain & Mfg. Co., Worcester,
Mass.

Cullman Wheel Co., 1020 Dunning, Chg.
Miller, Chas. E., 97-101 Reade St., N. Y.

Chain Boots.
Automobile Equipment Co., 263 Jeffer-
son av., Detroit, Mich.

Chimes.
Gray-Hawley Mfg. Co., Detroit, Mich.

Circulation Pumps.
Byrne, Kingston & Co., Kokomo, Ind.

McCord & Co., 1400 Old Col'y blg., Chg.

Clocks.
Automobile Equipment Co., 263 Jeffer-
son av., Detroit, Mich.

Automobl. Sup. Co., 1339 Mich. av., Chg.
Franco-American Auto Supply Co., 1404
Michigan av., Chicago.

Post & Lester Co., Hartford, Conn.

Clothing.
Miller, Chas. E., 97-101 Reade St., N. Y.

Clutches.
Smith Co., A. O., Milwaukee, Wis.

Speed Changing Pulley Co., 750 East
Washington st., Indianapolis, Ind.

Commercial Vehicles.
American Machine Mfg. Co., 133-137
Beaubien st., Detroit, Mich.

Buckeye Mfg. Co., Anderson, Ind.

Eisenhuth Horseless Vehicle Co., Mid-
dletown, Conn.

Jeffery & Co., Thos. B., Kenosha, Wis.

Knox Automobile Co., Springfield, Mass.

Lear Automob. Co., Oscar, Columbus, O.

Logan Construction Co., Chillicothe, O.

Matheson Mo. C. Co., Wilkes-Barre, Pa.

Motorcar Co., Detroit, Mich.

Olds Motor Works, Lansing, Mich.

Packard Motor Car Co., Detroit, Mich.

Pope Mfg. Co., Hartford, Conn.

Premier Mo. Mfg. Co., Indianapolis, Ind.

Rapid Motor Vehicle Co., Detroit, Mich.

White Sew. M. Co., Rose blg., Clevel'd.

THE WORLD RUNS EASIER

ON TIMKEN ROLLER BEARINGS

FACTS Not Fancies

That "The cost per mile" is going to be the determining factor in automobile buying in the future, and that the wise manufacturer realizes reduced friction is as important as added motive power, is positively proven by the increased uses each year of

TIMKEN ROLLER BEARINGS

on all high grade American made automobiles." ¶ And the reason for this is simply the demonstrated fact that the minimum of friction means the maximum of power—with *reduced operating and upkeep charges*. ¶ If you are not using TIMKEN ROLLER BEARINGS on the cars you build, write us—we can tell you in detail why you should.

TIMKEN ROLLER BEARING AXLE COMPANY

Eastern Branch: 219 W. 46th Street, New York
Western Branch: 429 Wabash Avenue, Chicago, Ill.

Works and General Office: CANTON, O.

We shall exhibit at the Chicago Show

Buyer's Directory of Advertisers—Continued

Crank Shafts.
Standard Welding Co., Cleveland, O.

Curtain Fasteners.
Neider Co., F. A., Augusta, Ky.

Designer.
Kenen, L. Chas., 1 Madison ave., N. Y.

Dashes and Fenders.
Hayes Mfg. Co., Detroit, Mich.
Quinby & Co., J. M., Newark, N. J.

Electric Automobiles.
Columbus Buggy Co., Columbus, O.
National Motor Vehicle Co., 2100 E. 22d st., Indianapolis, Ind.

Eye Shields.
Automobile Equipment Co., 263 Jefferson av., Detroit, Mich.
Autombl. Sup. Co., 1339 Mich. av., Chg.
Franco-American Auto Supply Co., 1404 Michigan av., Chicago.
Miller, Chas. E., 97-101 Reade St., N. Y.
Post & Lester Co., Hartford, Conn.

Forgings.
Smith Co., A. O., Milwaukee, Wis.
Standard Welding Co., Cleveland, O.

Frames.
Smith Co., A. O., Milwaukee, Wis.

Funnels.
Automobile Equipment Co., 263 Jefferson av., Detroit, Mich.
Autombl. Sup. Co., 1339 Mich. av., Chg.
Franco-American Auto Supply Co., 1404 Michigan av., Chicago.
Post & Lester Co., Hartford, Conn.

Gaskets.
McCord & Co., Old Col. bldg., Chicago.

Gasolene Automobiles.
Aerocar Co., Detroit, Mich.
Am. Mach. Mfg. Co., Detroit, Mich.
Autocar Co., Ardmore, Pa.
Bartholomew Co., 110 Bradley av., Peoria, Ill.
Buckeye Mfg. Co., Anderson, Ind.
Columbus Buggy Co., Columbus, O.
Deere-Clark Motor Car Co., Moline, Ill.
De Luxe Motor Car Co., Toledo, O.
Dolson Auto Co., Charlotte, Mich.
Dragon Automobile Co., Detroit, Mich.
Duryea Power Co., Reading, Pa.

Eisenhuth Horseless Vehicle Co., Middletown, Conn.
Evansville Auto. Co., Evansville, Ind.
E. V. H. Co., Middletown, Conn.
Ford Motor Co., Detroit, Mich.
Haynes Automobile Co., Kokomo, Ind.
Holsman Auto Co., Monad'nk blk., Chg.
Jackson Automobile Co., Jackson, Mich.
Jeffery, Thos. B. & Co., Kenosha, Wis.
Knox Automobile Co., Springfield, Mass.
Lear Auto Co., Oscar, Columbus, O.
Logan Construction Co., Chillicothe, O.
Mason Motor Car Co., E. 5th and Vine sts., Des Moines, Ia.
Matheson Mo. Car Co., Wilkesbarre, Pa.
Motorcar Co., Detroit, Mich.
National Mo. Ve. Co., Indianapolis, Ind.
Nurdyke & Marmon Co., Indianapolis.
Olds Motor Works, Lansing, Mich.
Packard Motor Car Co., Detroit, Mich.
Peerless Mo. C. Co., Lisbon st., Cleveland.
Pierce, The Geo. N., Co., 6-22 Hanover st., Buffalo, N. Y.
Pope Mfg. Co., Hartford, Conn.
Premier Motor Mfg. Co., Indianapolis.
Rainier Co., Broadway & 50th st., N. Y.
Royal Motor Car Co., Cleveland, O.
St. Louis Car Co., St. Louis, Mo.
St. Louis Motor Car Co., Peoria, Ill.
Smith Auto Co., Topeka, Kan.
Stearns, The F. B. Co., Euclid and Lake View aves., Cleveland, O.
Waltham Mfg. Co., Chicago, Ill.
Wayne Automobile Co., Detroit, Mich.
Welch Motor Car Co., Pontiac, Mich.

Gasolene Auto Engines.
Autombl. Sup. Co., 1339 Mich. av., Chg.
Brownell-Trebert Co., 407 St. Paul St., Rochester, N. Y.
Lear, Oscar Auto Co., Columbus, O.
Speed Changing Pulley Co., 754 Washington st., Indianapolis, Ind.

Gasolene Storage Equipment.
Bowser & Co., S. F. Ft. Wayne, Ind.

Gasolene Tank Indicator.
Turner Brass Works, Franklin and Michigan sts., Chicago.

Gears.
Autombl. Sup. Co., 1339 Mich. av., Chg.

Brownell-Trebert Co., 407 St. Paul st., Rochester, N. Y.
Cullman Wheel Co., 1030 Dunning st., Chicago.
Gray-Hawley Mfg. Co., 605-609 Fort st., W., Detroit, Mich.
Smith Co., A. O., Milwaukee, Wis.

Gear Cases.
Turner Brass Works, Franklin and Michigan sts., Chicago.

Generators.
Atwater-Kent Mfg. Works, 117 No. Sixth st., Philadelphia, Pa.
Atwood Mfg. Co., Amesbury, Mass.
Badger Brass Mfg. Co., Kenosha, Wis.
Dayton Electrical Mfg. Co., 87 St. Clair st., Dayton, O.

Gloves and Gauntlets.
Automobile Equipment Co., 263 Jefferson av., Detroit, Mich.
Automobile Supply Co., 1339 Michigan av., Chicago, Ill.
Franco-American Auto Supply Co., 1404 Michigan av., Chicago, Ill.
Miller, Chas. E., 97-101 Reade st., New York City.
Post & Lester Co., The, Hartford, Conn.

Grease.
Automobile Supply Co., 1339 Michigan av., Chicago, Ill.
Franco-American Auto Supply Co., 1404 Michigan ave., Chicago, Ill.
Post & Lester Co., Hartford, Conn.

Hampers.
Amer. Basket Factory, 480 S. Center av., Chicago, Ill.
Automobile Equipment Co., 263 Jefferson av., Detroit, Mich.
Automobile Supply Co., 1339 Michigan av., Chicago, Ill.
Franco-American Auto Supply Co., 1404 Michigan av., Chicago, Ill.
Post & Lester Co., Hartford, Conn.

Heaters.
Turner Brass Works, Michigan and Franklin sts., Chicago, Ill.

Hoods.
Hayes Mfg. Co., Detroit, Mich.

No Larger
Around
Than a Watch

The
Speed Dial
is Perfectly
Steady and
Readable
at All
Times



The Warner AUTO-METER

is used on the Best Cars, *Because*

It is the neatest and most handsome in appearance.

It is the *Only* speed indicator which is accurate at *Low Speeds*.

It is the most reliable, not only on account of the large figures (black on white), but because the dial is perfectly steady at all speeds and under all conditions of road.

It is the most durable speed indicator remaining accurate and dependable for years.

It has sapphire bearings like a chronometer—no cams or other sliding parts to wear or get out of order.

It cannot be broken or rendered inaccurate by any shock which would not destroy the car itself.

The reason why the Auto-Meter is really the only accurate, dependable and truly reliable speed indicator is *worth knowing*. It's worth any man's time to find out. Will you write us and let us *prove up*? *You can't afford to buy wrong*.

Warner Instrument Co., 526 Roosevelt St., Beloit, Wis.

Advise
us the **Model**
or **Power** of your
Car when you ask for
price installed ready for use

Buyer's Directory of Advertisers—Continued

Horns.

Automobile Equipment Co., 263 Jefferson av., Detroit, Mich.
Automobile Supply Co., 1339 Michigan av., Chicago, Ill.
Franco-American Auto Supply Co., 1404 Michigan av., Chicago, Ill.
Miller, Charles E., 97-101 Reade st., New York.
Post & Lester Co., Hartford, Conn.
Stewart & Clark Mfg. Co., 69 Wells st., Chicago, Ill.
Gray-Hawley Mfg. Co., 605-609 Fort st., W., Detroit, Mich.

Hubs.

American Ball Bearing Co., Cleveland.
Smith Co., A. O., Milwaukee, Wis.
Standard Welding Co., Cleveland, O.
Timken Roller Bearing Axle Co., Canton, Ohio.
Turner Brass Works, Franklin and Michigan sts., Chicago, Ill.

Hydrometers.

Automobile Equipment Co., 263 Jefferson av., Detroit, Mich.
Automobile Supply Co., 1339 Michigan av., Chicago, Ill.
Franco-American Auto Supply Co., 1404 Michigan av., Chicago, Ill.
Post & Lester Co., Hartford, Conn.

Igniting Devices.

Atwater-Kent Mfg. Works, 50 N. Sixth st., Philadelphia, Pa.
Bosch, Robert, 1945 Broadway, N. Y.
Dayton Electrical Mfg. Co., 87 St. Clair st., Dayton, O.
Franco-American Auto Supply Co., 1404 Michigan av., Chicago, Ill.
Pittsfield Spark Coil Co., Pittsfield, Mass.
Post & Lester Co., Hartford, Conn.
Splitdorf, C. F., 17-27 Vandewater st., New York City.
Wetherbee Igniter Co., 546 W. 43d st., New York City.

Indicators.

Automobile Equipment Co., 263 Jefferson av., Detroit, Mich.
Automobile Supply Co., 1339 Michigan av., Chicago, Ill.
Franco-American Auto Supply Co., 1404 Michigan av., Chicago, Ill.

Hicks Speed Indicator Co., 922 Union St., Brooklyn, N. Y.
Miller, Chas. E., 97-101 Reade st., New York.
Smith Manufacturing Co., R. H., Springfield, Mass.
Veeder Mfg. Co., Hartford, Conn.
Warner Instrument Co., 403 Roosevelt av., Beloit, Wis.

Jacks.

Automobile Equipment Co., 263 Jefferson av., Detroit, Mich.
Automobile Supply Co., 1339 Michigan av., Chicago, Ill.
Franco-American Auto Supply Co., 1404 Michigan av., Chicago, Ill.

Jobbers.

Automobile Supply Co., 1339 Michigan av., Chicago.
Franco-American Auto Supply Co., 1404 Michigan av., Chicago.
Miller, Chas. E., 97-101 Reade st., New York City.
Post & Lester Co., Hartford, Conn.

Lamps.

Atwood Mfg. Co., Amesbury, Mass.
Automobile Equipment Co., 263 Jefferson av., Detroit, Mich.
Automobile Supply Co., 1339 Michigan av., Chicago, Ill.
Badger Brass Mfg. Co., Kenosha, Wis.
Franco-American Auto Supply Co., 1404 Michigan av., Chicago, Ill.
Miller, Chas. E., 97-101 Reade st., New York City.

Lamp Brackets.

Miller, Chas. E., 97-101 Reade st., New York City.
Standard Welding Co., Cleveland, O.

Limousines.

Quinby & Co., J. N., Newark, N. J.

Lubricants, Oils, Etc.

Automobile Equipment Co., 263 Jefferson av., Detroit, Mich.
Automobile Supply Co., 1339 Michigan av., Chicago, Ill.
Columbia Lubricants Co. of New York, 78 Broad st., N. Y. City.
Dixon, Jos., Crucible Co., Wayne and Monmouth sts., Jersey City, N. Y.

Franco-American Auto Supply Co., 1404 Michigan av., Chicago, Ill.
Kellom & Co., Chas. F., 128 Arch St., Philadelphia, Pa.
Vacuum Oil Co., Rochester, N. Y.

Lubricators.

Dodge Lubricator Co., 8 Waltham st., Boston, Mass.
McCord & Co., 1400 Old Colony Bldg., Chicago, Ill.
Miller, Chas. E., 97-101 Reade st., New York City.

Maps.

Mendenhall, C. S., Race st. and Opera pl., Cincinnati, O.

Mats.

Goodrich, B. F., Co., Akron, O.

Motors.

Brownell-Trebert Co., 407 St. Paul st., Rochester, N. Y.
Speed Changing Pulley Co., Indianapolis, Ind.

Mufflers.

Byrne, Kingston & Co., Kokomo, Ind.
Gray-Hawley Mfg. Co., 605-609 Fort st., W., Detroit, Mich.
Hayes Mfg. Co., Detroit, Mich.
Smith & Co., D. B., Utica, N. Y.
Turner Brass Works, Chicago, Ill.

Names Plates.

Atwood Mfg. Co., Amesbury, Mass.
Smith, R. H., Mfg. Co., Springfield, Mass.
Turner Brass Works, Franklin and Michigan sts., Chicago, Ill.

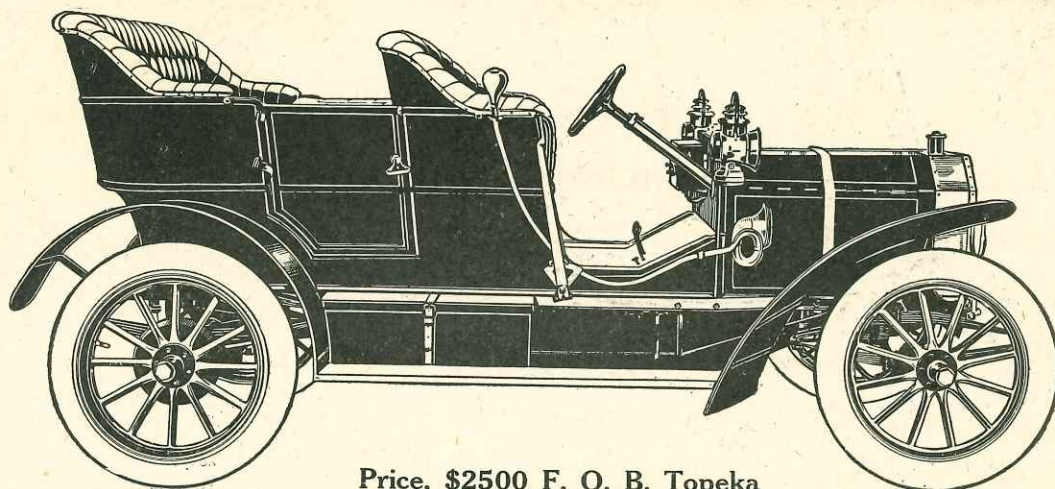
Oil Cans.

Automobile Supply Co., 1339 Michigan av., Chicago, Ill.
Franco-American Auto Supply Co., 1404 Michigan av., Chicago, Ill.

Oil Guns.

Automobile Equipment Co., 263 Jefferson av., Detroit, Mich.
Automobile Supply Co., 1339 Michigan av., Chicago, Ill.
Columbia Lubricants Co. of New York, 78 Broad st., N. Y. City.
Franco-American Auto Supply Co., 1404 Michigan av., Chicago, Ill.

1907 GREAT SMITH CAR



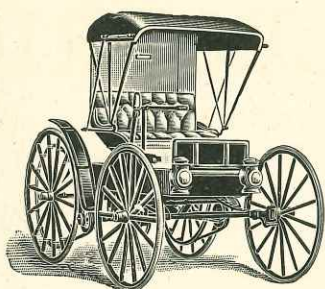
Price, \$2500 F. O. B. Topeka

Four cylinders, $4\frac{1}{2} \times 5$ inches, water cooled engine, sliding gear transmission, three speeds forward and one reverse. 107 inch wheel base, 34 x 4 inch tires. Multiple disc clutch, ample tonneau, magnificent upholstery. Full elliptic unbreakable springs. Refrigerator in box at side. Ample room for extra tire, three powerful durable brakes.

IN ALL RESPECTS A PERFECT MACHINE—BUILT AS WELL AS ANY CAR IN THE WORLD

Smith Auto Co. : Topeka, Kansas, U. S. A.

Makers of the World's Greatest \$2500 Car

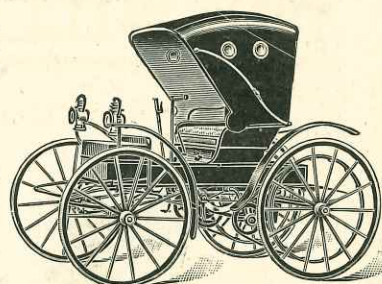


Model 3

The Holsman Automobile

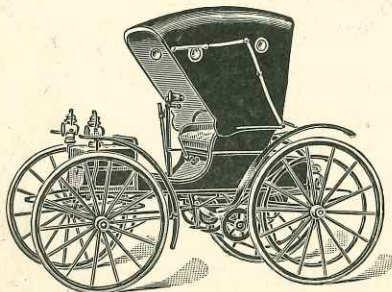
FIFTH YEAR OF SUCCESS

The Holsman Automobile has now been on the market five years and has long since passed the experimental stage. It is built high enough to travel the country roads like a carriage and can



Model 9

be run twelve months in the year. It clears the center of the road by eighteen inches, and therefore has **Twice the Advantage** of the ordinary machine in muddy, rutty, rough or rocky roads. Has large wheels, solid rubber tires and **Rides Like a Carriage**. The Holsman exclusive patent marks an era in automobile building. It does away with all live axles, friction clutches, differential gears, pumps, etc. Reverses without extra gears. **No water to freeze; No puncture troubles; No odor. New hill climbing power.**



Model 10

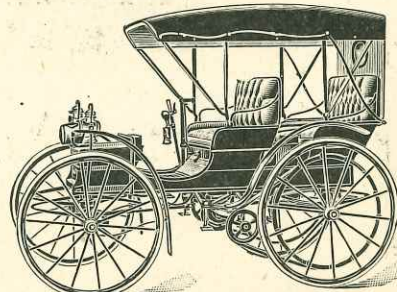
ASK FOR CATALOGUE

**THE
Holsman Automobile Co.**

Room 612, Monadnock Block

CHICAGO

Chicago Automobile Show, Feb. 2 to 9, Main Floor, Coliseum



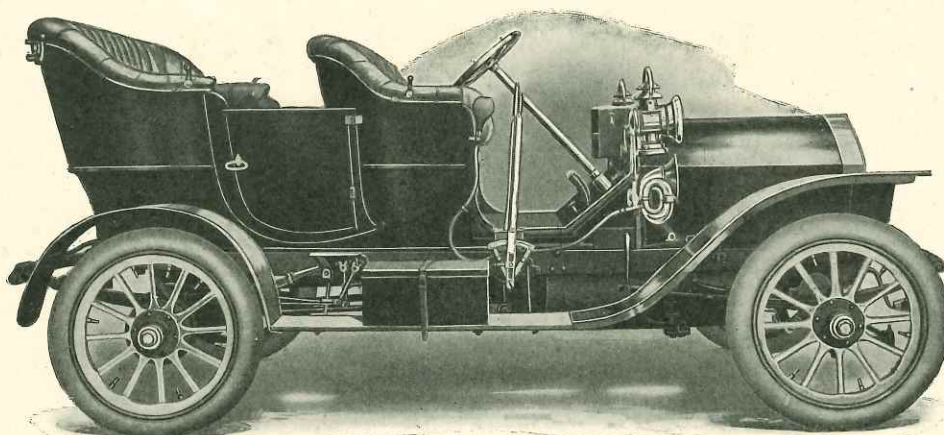
Model 11



It is the little things that make life pleasurable. So in motoring. If your car is scientifically designed, properly constructed, and the details well thought and worked out, yours is the pleasure. Stop at Space F-5, Coliseum, and let us show you a car with all these qualities, the

KNOX WATERLESS

the best value for the money in the world. 25-50 H.P.; 2250 lbs.; 102-in. wheel base; 32-in. x 4-in. wheels.

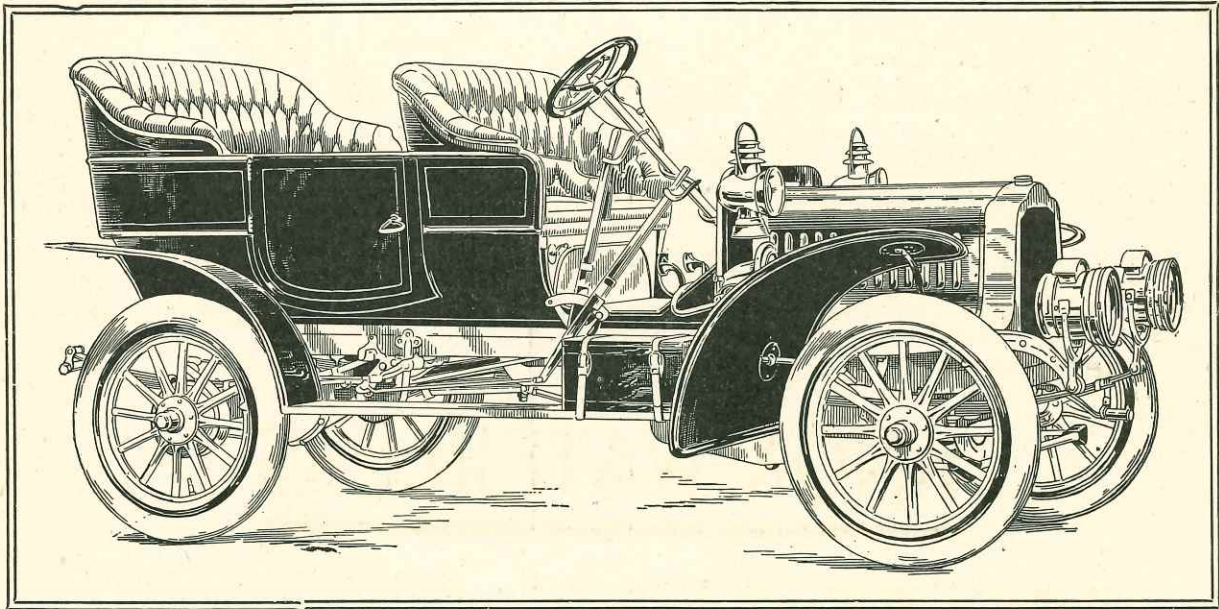


Knox Automobile Company

Member Association Licensed Automobile Manufacturers

SPRINGFIELD, MASS.

THE 1907 QUEEN 28



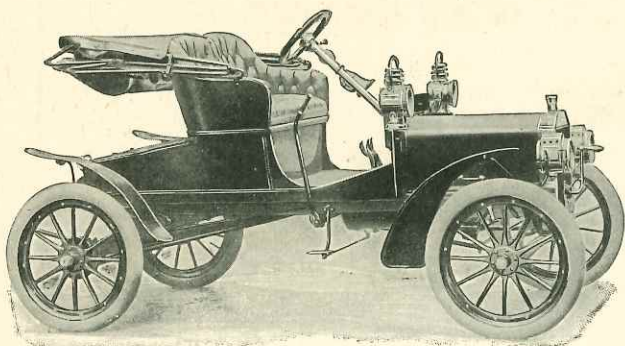
Price \$2,350

EASILY THE EQUAL OF ANY \$2700 CAR FOR 1907
28-30 HORSE POWER FIVE PASSENGER
SEE THIS 1907 QUEEN 28 AT THE CHICAGO AUTO-
MOBILE SHOW, FEBRUARY SECOND TO NINTH

CATALOG ON REQUEST

C. H. Blomstrom Motor Co.
DETROIT, MICHIGAN

Price Increased



FORD 4-CYLINDER RUNABOUT \$600

THE EXPECTED HAS HAPPENED.

OWING TO THE INCREASED COST OF MATERIALS and the incorporation of special steels and other metals throughout this wonderful car it has become necessary to increase the price \$50 in order to make the car at a profit at all.

AFTER FEBRUARY FIRST the price of the Model "N" Ford runabout will be \$600, F. O. B., Detroit.

THIS LOOKS LIKE A \$100 BOOST. In fact it is only \$50. Heretofore the standard tire equipment was 28 inches by 2½ inches. Fully 95 per cent of our customers preferred to pay \$50 extra and have 3-inch tires—they will be cheaper at the end of a year's service.

HEREAFTER THERE WILL BE NO OPTION on tires; 3-inch will be standard equipment—what will our poor competitors have to complain about now?

WE MAKE NO APOLOGIES for this raise in price; it has been made against our own inclinations; but we cannot control the price of steel, brass, aluminum and other materials. And the margin never has been even a fair one.

2,500 OF THESE CARS are now on the road—doing more effective advertising for us than we can get through any other medium. YOU know the quality of the car. YOU know it will trim anything in the world at less than \$1,000—speed—hill climbing—endurance—reliability. YOU know Model "N" owners are the most enthusiastic motorists you meet. YOU know this car is more hated by competitors, more loved by its owners than any other automobile ever built—and YOU know the reasons why.

LET'S PUT OURSELVES ON RECORD. We dread an experience such as we had last year—thousands of anxious customers disappointed. It will be the same in a few weeks if you wait.

IF YOU WANT ONE—order now. We can promise early delivery—we will not be responsible for conditions a month hence.

THE SHOW SEASON WILL SWAMP our several branch stores with orders for the next month or two—better get your order in before they have to decline it or deny you prompt delivery.

**A Demonstration
is a Revelation**

Price list of lamps, tops and other accessories for the asking.

Ford Motor Company

Factory: Detroit, Mich.

Member American Motor Car Manufacturers' Association,
New York.

Branches: 147-149-151-153 Columbus Ave., Boston; 1721-23 Broadway, New York; 727 Main St., Buffalo; Broad and Buttonwood Sts., Philadelphia; 1444 Michigan Ave., Chicago; 1913 S. E. Euclid Ave., Cleveland, and 318-320 E. 11th St., Kansas City. CANADIAN TRADE supplied by Ford Motor Co., of Canada, Ltd., Walkerville, Ontario.



Light

Running

1907

AUTOMOBILES

"A Car Designed to Satisfy"

The policy of this company is not to see how many cars can be built each year, but to see how perfectly and satisfactorily each machine can be built.

Our new factory, modern in every respect, is thoroughly equipped with the latest and most improved machinery and none but expert and practical men are employed in every department.

The national reputation of Mr. C. H. Deere, of the Deere Plow Company, should guarantee the reputation of this company, and the ten years' experience of our Mr. W. E. Clark in the manufacture of Motor Cars enables us to produce a car of unsurpassed quality built on the most modern principles.

Our 1907 catalogue will interest you.

Deere-Clark Motor Car Co.

114 Blackhawk Ave., Moline, Ill.

A FEW GOOD AGENTS ARE DESIRED

The
"B.&S."



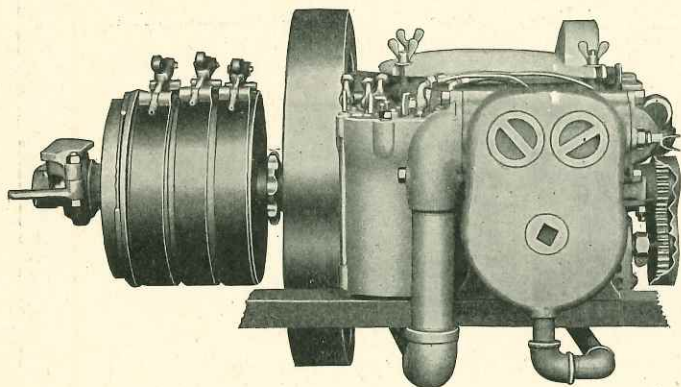
is the recognized
**Standard
Automobile
Wrench**

Drop Forged
Steel. Made
in four
sizes.

Careful
workmanship.
Every wrench is
tested. No wrench
can be made strong-
er. Cut also shows
our Pipe Attachment.
Get our new catalog of
Auto Forgings and Tools.



The Billings & Spencer Co., Hartford, Conn.

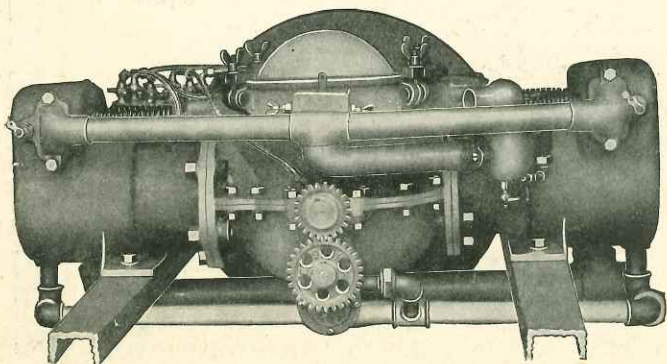


END VIEW

Model E. Motor and Transmission

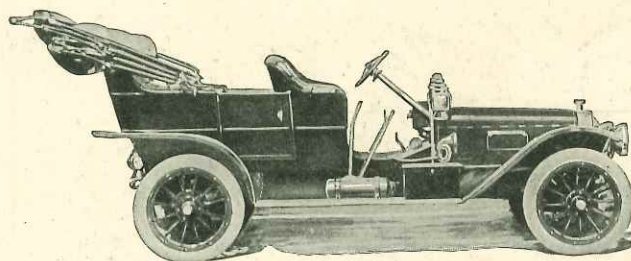
Most complete power outfit for Automobiles or Trucks on the market to-day. Send for Catalog E. describing everything in detail.

The Westerfield Motor Co., Anderson, Ind.



SIDE VIEW

The Reason Why of Six Cylinders



FORD MODEL "K" 1907 40 H. P.

THE REAL BASIS SIX-CYLINDER POPULARITY among engineers and buyers is to be found in something more logical than that people like to conjure up more worry for themselves. Yet that is the burden of all arguments against "the year-ahead" type, by those who have only "fours" to sell—and they are to be pitied rather than censured.

EVERY DESIGNER IN THE WORLD would prefer to build "one lungers" if his own convenience alone was to be considered. They did build them until the public got wise and then educated the designer by demanding better. Next to a single of course the "double" presents the fewest engineering problems and the "four" comes next.

THERE IS ONLY ONE REASON IN THE WORLD why a designer like Mr. Ford has adopted the six-cylinder type. It was because, in his search for the nearest approach to perfection in an explosion engine—in his aim to produce a noiseless, vibrationless motor and one that would furnish ample power at slow as well as at high speeds; one that would almost if not entirely eliminate the gear-changing nuisance; and a motor that would live as long as such a machine should live—he found, as all other engineers who have gone as far have found, that only in the even torque of the six could these qualities be obtained.

MORE PROBLEMS FOR THE DESIGNER—but once these were solved the troubles of the owner are in inverse ratio to the number of cylinders. Idiotic arguments about "more cylinders the more trouble" impress no one—what cylinder or valve or ignition troubles does one have in a well designed motor nowadays? Persons who advance such arguments must be as far behind in their general knowledge of the science as they are in recognizing the inestimable superiority of the six-cylinder car.

WE MAKE SIXES AS WE MAKE OTHER CARS—in larger quantities and more accurately machined—so as to eliminate the guess factor in assembling and testing and so we need a larger market than the others. FORD PRICES create the Ford demand; the answer is—if you want one for early Spring touring order now or you may be disappointed. Others have been.

\$2,800.00

*A Demonstration
is a Revelation*

Ford Motor Company
Factory: Detroit, Mich.

Member American Motor Car Manufacturers' Association,
New York.

Branches: 147-149-153-163 Columbus Ave., Boston; 1721-23 Broadway, New York; 727 Main St., Buffalo; Broad and Buttonwood Sts., Philadelphia; 1444 Michigan Ave., Chicago; 1913 S. E. Euclid Ave., Cleveland, and 318-320 E. 11th St., Kansas City. CANADIAN TRADE supplied by Ford Motor Co. of Canada, Ltd., Walkerville, Ontario.



The Autocar

Reliability

Type XIV \$3000

Four vertical cylinders. 30 horse-power. Sliding gear, roller-bearing transmission. Direct shaft drive. Three speeds and reverse. 112 in. wheel base.

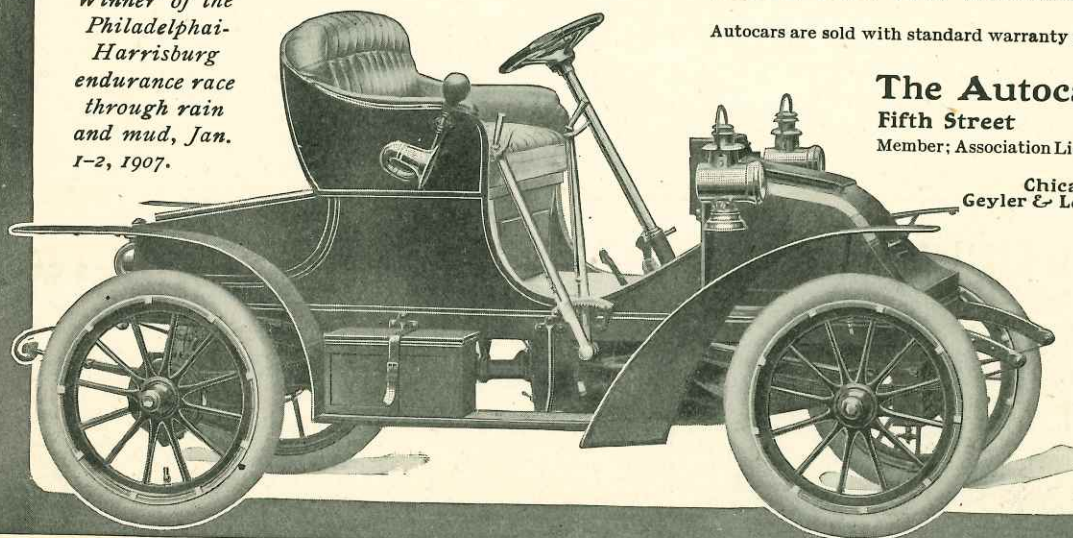
The power, efficiency and *reliability* of each car (in part and as a whole) are positively established, by a uniquely exhaustive system of tests and re-tests at the factory.

Autocar Three-point Suspension of power-plant *as a unit* can be depended on to prevent any disturbance of the perfect alignment of motor, flywheel, clutch and transmission, or of the relations of their component parts.

TYPE XV Standard Runabout \$1200

The only two horizontal-opposed cylinder runabout with motor under hood, sliding-gear ball-bearing transmission, and *three* speeds and reverse.

*Winner of the
Philadelphia-
Harrisburg
endurance race
through rain
and mud, Jan.
1-2, 1907.*



WRITE FOR THE AUTOCAR BOOK

Autocars are sold with standard warranty of N. A. A. M.

The Autocar Company

Fifth Street Ardmore, Pa.
Member; Association Licensed Automobile M'frs.

Chicago Distributors:
Geyler & Levy, 390 Wabash Ave.

Limousine
and
Landaulet
for immediate
delivery,
\$3500



The 1907 CORBIN is not the creation of this year alone; it is the cumulative result of our entire experience. It has been created without regard to cost, but rather to produce only the best in all details of material, workmanship and accessories.

THE CORBIN MOTOR VEHICLE CORPORATION NEW BRITAIN, CONN.

Member Association Licensed Automobile Manufacturers

AGENCIES:

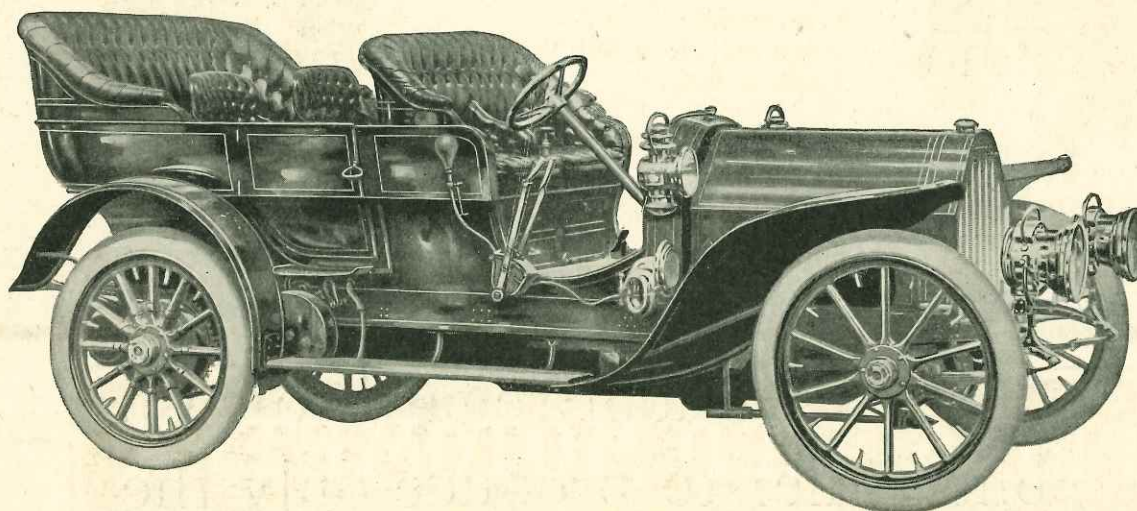
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Pope = Toledo

The All Chrome Nickel Steel

All Ball-bearing 50 H.P. Touring Car. Price \$4,250



The Pope-Toledo, Type XV is made throughout of chrome nickel steel, and it is not therefore hard to understand why its weight is less and yet the machine is stronger, more durable and dependable, more powerful and faster and easier on tires than cars made of the next best grade of steel, and consequently carrying so much more weight to get the same result. The Type XV, 50 H.P. Pope-Toledo is a ball bearing car from start to finish. Wherever it is possible to use a ball bearing the genuine Importer Deutsche Waffen Fabrik is used.

The more you investigate the Automobile situation for 1907, and the more minutely you compare Type XV with other stock, the more you become convinced that

Your Choice Should Be a Pope-Toledo

SEND FOR CATALOG

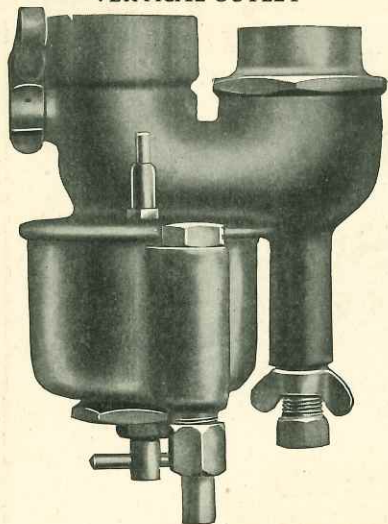
POPE MOTOR CAR COMPANY
TOLEDO, OHIO

Members Association Licensed Auto. Mfrs.

KINGSTON

1907 CARBURETORS

VERTICAL OUTLET

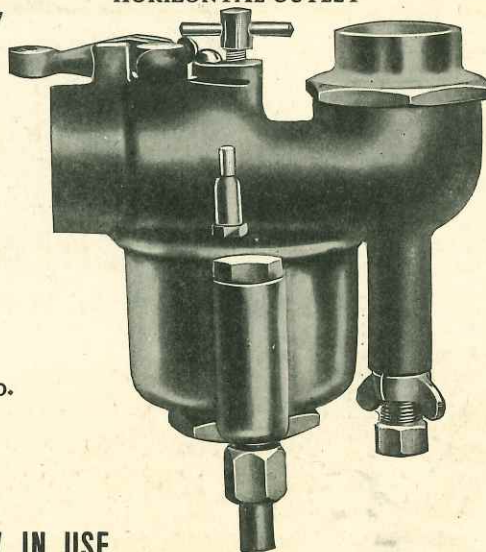


Furnished as regular 1907
equipment by

Olds Motor Works
Ford Motor Co.
Haynes Auto Co.
Wayne Auto Co.
E. R. Thomas Detroit Co.
Motorcar Co.
Detroit Auto Vehicle Co.
Buckeye Mfg. Co.
Rapid Motor Vehicle Co.
Continental Motor Mfg. Co.
Austin Auto Co.

and many others.

HORIZONTAL OUTLET



OVER 46,000 KINGSTON CARBURETORS NOW IN USE

For Sale by all Jobbers. **BYRNE, KINGSTON & CO., KOKOMO, IND., U. S. A.**

THE SPRINGFIELD MOTOMETER

It is by far the easiest speedometer to read from the seat. The whole scale is in sight and remains in sight. The Springfield has the only vertical scale: High speed, high pointer; low speed, low pointer.

This speedometer works on the fly-ball governor principle. The working parts are all of steel, with hardened bearings, self-lubricating and enclosed in a weather-proof polished bronze case.

There are no unbalanced movements, no delicate parts to break, no frictional parts to affect the accuracy by wear. The construction is simple, effective and undisturbed by jolting or sudden shocks. It is backed by a full guarantee for two years.

Our Fire Chief uses his auto for *business*. He writes:

The R. H. Smith Mfg. Co.,
Gentlemen: Your "Springfield Motometer" has now been installed on my car long enough to permit a fair test of its merits and I am pleased to say that it has performed to my entire satisfaction. Not only is it accurate and steady at widely varying speeds, but it has given no trouble of any kind. I consider it a very fine instrument.

Yours truly,

W. J. LITTLEFIELD, Chief, Springfield, Mass. Fire Department.

YOU CAN'T GET a better speedometer at double the price. It is as perfect as high-grade material, skilled workmanship and a correct mechanical principle can make it.

Specify the "Springfield" as part of the equipment of your car and order it installed at the factory. The car builders all know it. They will put it on *if you say so*.

Complete with fixtures for any car
Price: 60 Mile \$50.00; 50 Mile \$45.00

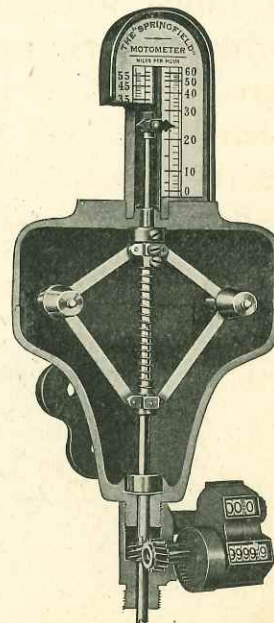
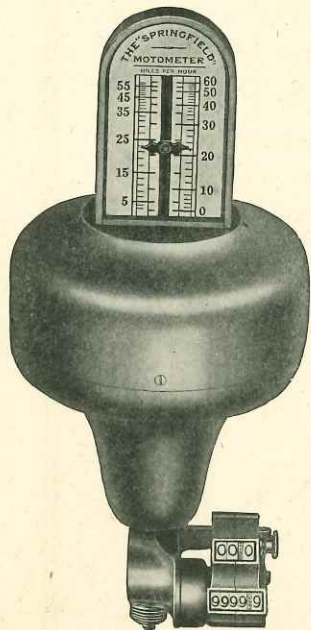
Send for catalog and booklet of FACTS

The R. H. Smith Mfg. Company

Established 1865

Springfield, Mass.

Incorporated 1883



THE MARMON

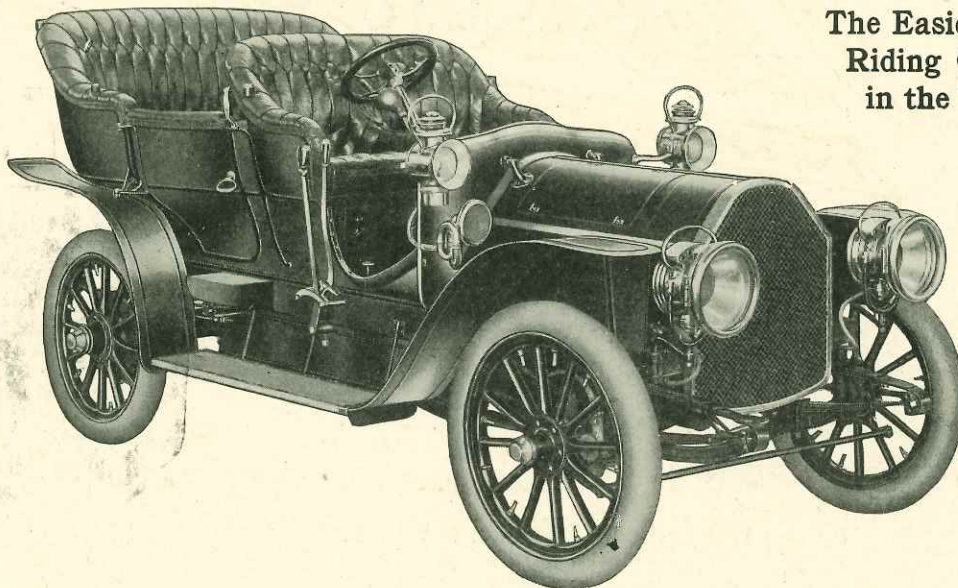
"A Mechanical Masterpiece"

The Easiest
Riding Car
in the World

Model "F"
\$3500

Model "C-7"
\$2500

Eight-Cylinder
\$5000



The Marmon Air-Cooled Feature Never Causes Motor Trouble of Any Sort

In the Coldest Weather, when the car is standing, you don't have to cover the motor with a blanket nor keep it running. There is nothing to freeze.

In the Hottest Weather, you can keep going always with the Marmon. Drive as hard as you please, up hill, through sand or mud—even without the fan, if necessary—it cannot fail to prove that its cooling system is superior to all other types. Its control is fully as flexible as steam car control, if not more so, and very simple.

This company has perfected a car of many striking features, such as its flexible running gear, its unrivaled oiling system, its rigid shaft drive, its selective transmission, roller bearing steering column, and scores of other things that experts appreciate.

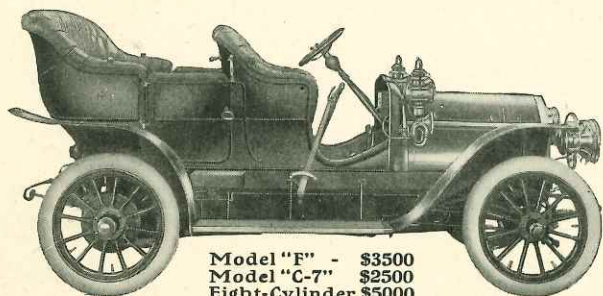
And the value of all this is enhanced because of an absolutely reliable Air-Cooled Motor, different from any other. Any Marmon owner will tell you this. Any Marmon dealer will be glad to prove it.

Back of Marmon Air-Cooling Stands the Guaranty of this Company, whose High Grade Machinery has enjoyed a World-Wide Reputation for over Fifty Years

For 1907 Catalog. Address Dept. 17

Nordyke & Marmon Co., Established 1851 **Indianapolis, Ind.**

Member American Motor Car Manufacturers Association



Model "F" - \$3500
Model "C-7" \$2500
Eight-Cylinder \$5000

FOR SALE BY

Theo. E. Schulz, Broadway & 110th St., New York City
F. E. Wing Motor Car Co., 12 Columbus Ave., Boston, Mass.
Brazier Auto Works, 38th & Market Sts., Philadelphia, Pa.
Snodell Automobile Co., 2552 Madison Ave., Baltimore, Md.
Rickey Machine Co., 92 Eaton Place, East Orange, N. J.
Piedmont Motor Car Co., 103 Pryor St., Atlanta, Ga.
Van Automobile Co., 4706 Washington Ave., St. Louis, Mo.
Geo. J. Treadgold, Hay St. & Kelly Ave., Wilkinsburg, Pa.
A. F. Chase & Co., 418 Third Ave., South, Minneapolis, Minn.
Nashville Motor Car Co., Nashville, Tenn.
L. L. Heller, Kilmer Bldg., Binghamton, N. Y.
C. S. Anthony, 440 West 33rd St., Los Angeles, Cal.
A. M. Zimbrich, 45 South Ave., Rochester, N. Y.
Gibson Auto Co., 238 Mass. Ave., Indianapolis, Ind.
Pittsburg, Pa., Geo. J. Treadgold, Hay St. & Kelly Ave., Wilkinsburg.

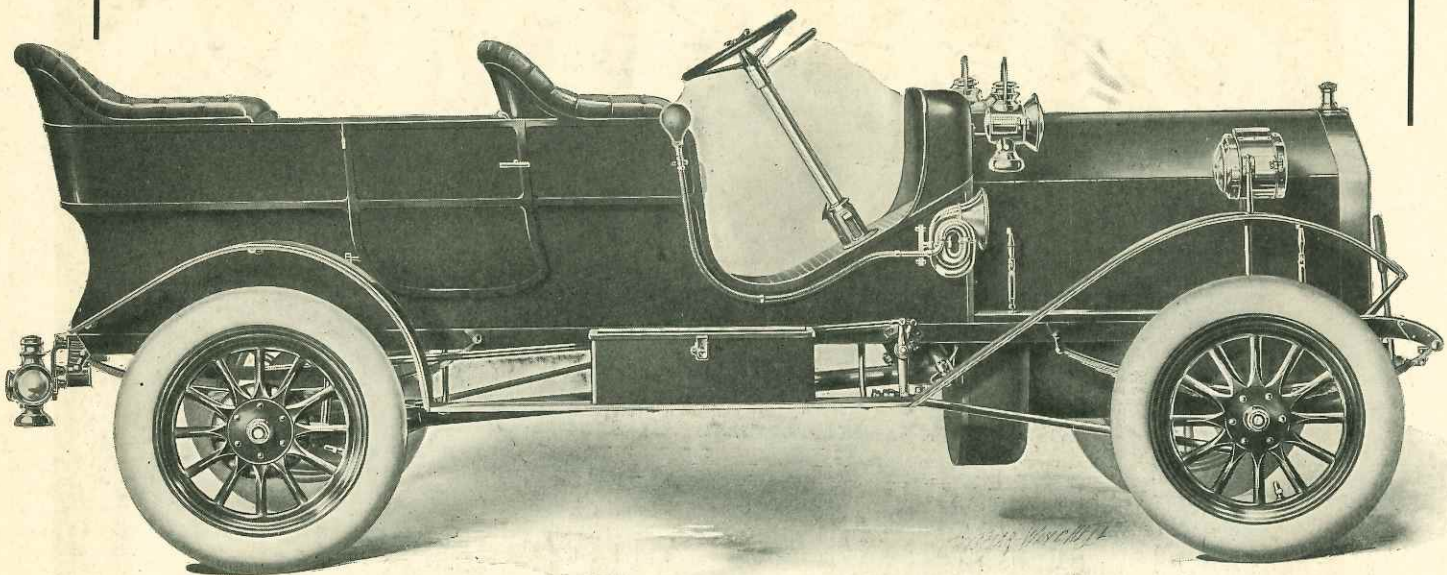
Packard



EVERYWHERE AND ALWAYS—
"IT'S A PACKARD"

PACKARD MOTOR CAR CO. DEPT 10.
DETROIT MICHIGAN

NORTHERN



New Northern Four-Cylinder Car, Model "L"

THE CAR OF DISTINCT ORIGINALITY

It is with deep satisfaction that we announce the **Northern Model L, Four-Cylinder Car**. This car has been tested on the road for more than a year, and we present it with the confidence that comes from the knowledge that by actual and severe road test it is a complete success. It bristles with original features. We ask your investigation and consideration of these, not simply because they are **original**, but because they are radical improvements over means and methods heretofore and now employed in other cars.

Northern improvements make for fewer parts, greater economy of maintenance, greater ease of operation, greater reliability and increased comfort.

Please note the following points and specifications. Further details furnished on request.

Price, \$3,500.00,
Cylinders, 5 x 5½ inches,
Horse Power, 50,
Wheel Base, 119 inches,
Tires, 34 x 4½ inches,
Offset Cylinders,
Offset Cam Shaft,
Valves all open direct in cylinders,
Valves Interchangeable,
Four Hub Brakes,
Air Brake on Hubs,
Self-Adjusting Air Clutch,
Engine attachment for Inflating
Tires,

Northern Patent Compensating
Spring Suspension,
Three Speed Sliding Gear in Rear
Axle,
Entire Control on Steering Col-
umn,
No Side Levers,
Jump Spark Ignition,
Automatic Safety Spark Retarder,
Motor Starts on Spark,
Instant Access to All Working
Parts,
Five Lamps, Horn, Tools, Etc.—
Regular Equipment.

Catalogue and detailed description of any and all Northern models sent free on request

NORTHERN MOTOR CAR CO., Detroit, Michigan, U. S. A.

Member Association Licensed Automobile Manufacturers

See our exhibit in Space F-2, Coliseum, Chicago Feb. 2-9, 1907.

The Stearns

The Sunrise of American Supremacy—the glorious Stearns fulfills the prophecy that America must take the lead in motor car construction.

The white frame around the radiator distinguishes the Stearns Car at a glance. It means more than a handsome decoration, for it is made possible by the cast aluminum housing protecting the radiator from damage in garage or on the road, yet exposing every nook and cranny to the soldering iron by releasing four nuts. A part of the "2100 hours labor" is shown by this refinement.

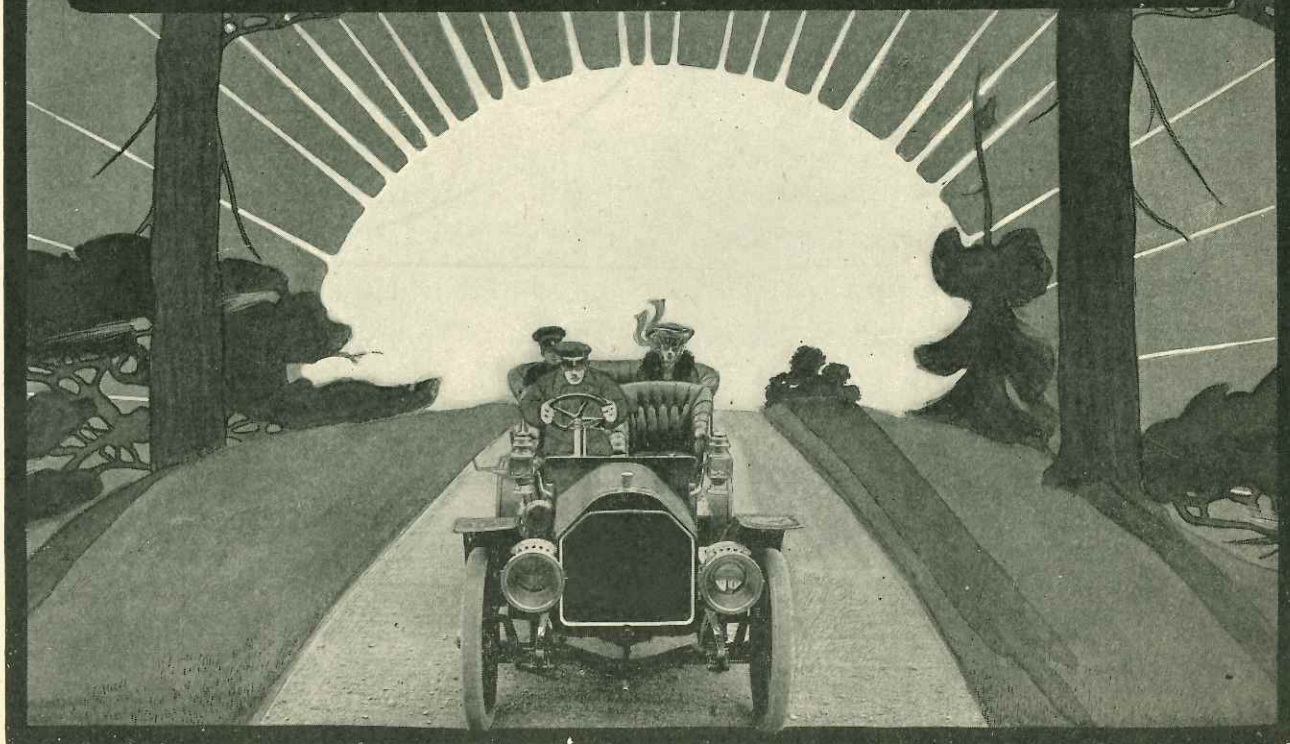
\$4,500. The easy running qualities of a "30" in highest perfection — the power of a "60" when needed. The catalogue tells how. Write today

F. B. STEARNS CO., 2995 Euclid Ave., Cleveland, Ohio

Members A. L. A. M. Estab. 1896

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 Philadelphia: The Motor Shop, 317 N. Broad St.
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 Scottsdale, Pa.: Scottsdale Automobile Co.

Rochester, N. Y.: United States Automobile Co.
 Cincinnati: Hughes Automobile Co., 608 Broadway.
 St. Louis: Reyburn Motor Car Co., 5023 Delmar Boul.
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The Mark of Electric Vehicle Perfection

"WOODS"

"BUILT BY PIONEERS"

NOT AN EXPERIMENT

1897-1907

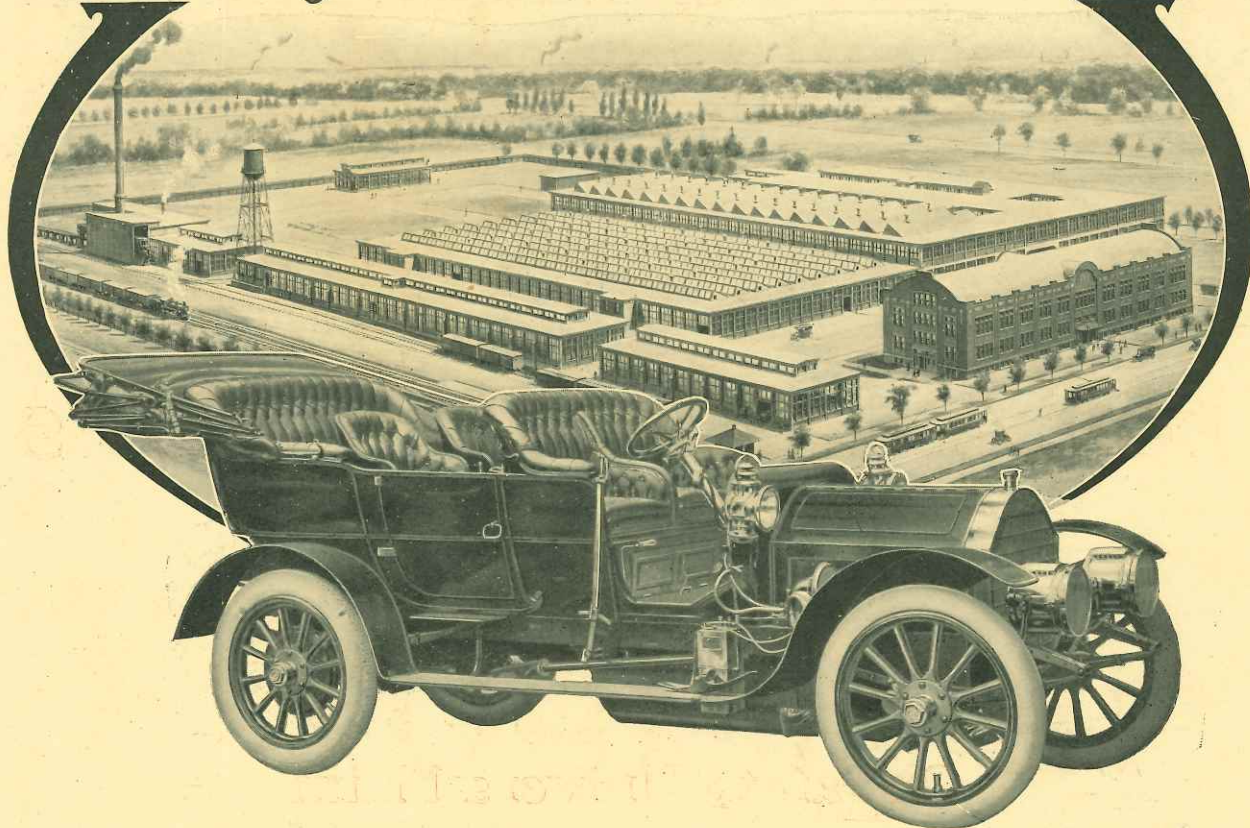
WOODS MOTOR VEHICLE COMPANY

Chicago, Illinois

SEE THE MAN WHO SELLS THEM

Broadway Automobile Co.	Seattle, Wash.
F. M. Crouch	Duluth, Minn.
Chas. S. Denman	Des Moines, Iowa
Detroit Automobile & Supply Co.	New York City, N. Y.
Fee-Vincent Electric Car Co.	Detroit, Mich.
Lord Motor Car Co.	Los Angeles, Calif.
Mathewson Automobile Co.	Denver, Colo.
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"The Factory behind the Pierce Great Arrow"



This illustration shows a very comfortable car—The Pierce Great Arrow 40-45 horsepower, 7-passenger touring car. The two extra seats in the tonneau are just as comfortable as the other seats. They revolve like an office chair or a parlor car seat so as to add to the sociability of the party in the tonneau. Price, \$5,000. Cape top extra.

THE real test of the Pierce car is not a perfect record in an exhibition contest like the Glidden Tour, but a perfect record over twice the amount of mileage in the hands of the owner.

Not for two or three weeks at a time, under ideal conditions, but all the time, under all conditions, and over all roads, the Pierce Arrow has proved itself the American car for American men.

Having produced a car as satisfactory as the Pierce, it is up to us to produce a factory good enough and big enough to make the Pierce car as good as it has been in quantities to supply the demand. Hence the Pierce car is now backed up by a factory which we believe is the most complete and most satisfactory of its kind in the world.

The George N. Pierce Co.

Members of Association of Licensed Automobile Manufacturers

Buffalo, N. Y.

Pierce Dealers

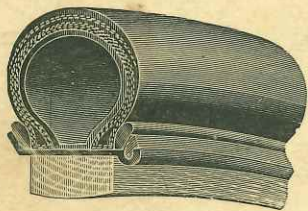
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Southern Auto Co.	Mt. Royal and Maryland Aves., Baltimore, Md.
Central Auto Station Co.	92 Renne Ave., Pittsfield, Mass.
E. R. Clark Auto Co.	117 Lyman St., Springfield, Mass.
The Miner Garage Co.	High and Allyn Sts., Hartford, Conn.
Wilson & Co.	117 Craig St., West, Montreal, Canada
Automobile and Supply Co., Ltd.	22 Temperance St., Toronto, Ont.
Hibbard Automobile Co.	187 Wisconsin St., Milwaukee, Wis.
Foss-Hughes Motor Car Co.	512 Industrial Trust Bldg., Providence, R. I.
U. S. Automobile Co.	21 Plymouth Avenue, Rochester, N. Y.
Amos-Pierce Auto Co.	109 S. State St., Syracuse, N. Y.
Utica Motor Car Co.	Utica, N. Y.
Troy Automobile Exchange	22 Fourth St., Troy, N. Y.
Standard Motor Car Co.	Scranton, Pa.
A. E. Lambert	Titusville, Pa.
H. B. Doherty	24 Wall St., Binghamton, N. Y.
Texas Automobile Co.	614 Milam St., Houston, Texas.

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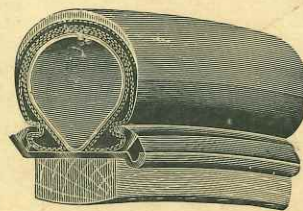
"Firestone"

The Pneumatic Tires
of "Sterling Quality"

For All Standard Rims



"Firestone" Quick Detachable Tire



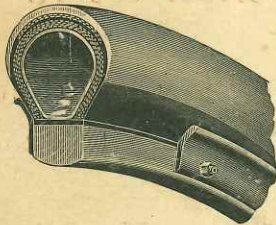
"Firestone" Standard Clincher Tire

On Safety Universal Rim

The above tires may be used respectively on any other standard quick detachable or clincher rims.

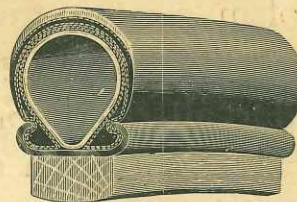
Removable flange rings equip this rim to receive any other standard quick detachable or clincher tire.

The Safety Universal Rim is the latest rim on the market; it embodies quick-acting features second to no other 1907 rim, at the same time making greater provision for **absolute safety**.



Mechanically Fastened

Our 1906 Pneumatic with brass clips removed and a spreader added



Standard Clincher

We are producing a full line of the standard clincher tires and rims.

"Firestone" Pneumatic Tires are manufactured with the same regard for dependable high quality that has made "Firestone" Side-Wire Solid Motor Tires the standard of the world for commercial motor vehicles.

That is the Best That Could be Said of ANY Tire

Why run risks when you may have "Firestone" Pneumatic Tires for any standard rim?

Firestone Tire & Rubber Co. **AKRON OHIO**

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BUFFALO: Ellicott and Tupper Sts.